TEXTILES PAPER LEATHER

AMERICAN DYESTUFF REPORTER

Including the Proceedings of the
AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS

VOLUME XIV FEBRUARY 23, 1925 NUMBER 3

THE NEWPORT COLORS

Made in U. S. A.

Newport Chrysophenine Extra

An Old Friend

Still going strong for two *good* reasons—

Best Quality Made

Lowest Price Obtainable

NEWPORT COAL TO DYESTUFF

Newport Chemical Works, Inc.

Passaic, New Jersey

BRANCH OFFICES AND WAREHOUSES:
Boston, Mass.; Providence, R. I.; Philadelphia, Pa.; Chicago, Ill.; Greensboro, N. C.

DU PONT DYESTUFFS

VAT PRINTING BROWNS

PONSOL BROWN G DOUBLE PASTE FOR PRINTING
PONSOL BROWN R DOUBLE PASTE FOR PRINTING

These two vat browns have been especially prepared for the printing of all types of cotton goods.

The fact that these shades may be used alone or in combination with other members of the Ponsol series makes possible the production of a wide range of desirable colors having extreme general fastness properties.

E. I. DU PONT DE NEMOURS & CO., INC.

Dyestuffs Department

WILMINGTON DELAWARE

American Dyestuff Reporter, Vol. XIV, No. 3. Feb. 23, 1925. Published twenty-two times a year by Howes Publishing Co., Inc., 90 William Street, New York, N. Y. Domestic subscription $5.00; Canadian, $5.50; foreign, $6.00. Entered as second-class matter Nov. 6, 1919, at the New York, N. Y., Post Office, under the Act of March 3, 1879. Copyrighted, 1925, by Howes Publishing Co.

BRANCH OFFICES:
BOSTON
PHILADELPHIA
CHICAGO

FACTORIES:
LOCK HAVEN, PA.
NYACK, N. Y.

Immediate Delivery

For the artificial silk piece and skein dyers

our new line of

AMANIL CHROME BROWNS

namely:

AMANIL CHROME BROWN G T
AMANIL CHROME BROWN R T
AMANIL CHROME BROWN 2 R T
AMANIL CHROME DARK BROWN T

These dyestuffs are of particular interest to the dyer because of their **level dyeing** and **evenly exhausting qualities,** good fastness to light, acids and calendering, and are well suited for the dyeing of cotton yarns, artificial silks, hosiery and cotton piece goods.

By aftertreating them with Bichromate of Soda or Potash and Sulphate of Copper, excellent fastness to light and washing is obtained.

Prices and samples gladly furnished upon request.

Do not fail to call on us with your dyeing problems.

American Aniline Products, Inc.

45 EAST 17th STREET :: NEW YORK, N. Y.

Established 1895

BOSSON & LANE

Manufacturers of

The Original

BLEACHING OIL

for boiling out Cotton, to produce a foundation for a Pure White

High Grade Sulphonated and Saponified

CASTOR OIL PRODUCTS

Para Soap Oil

Solvents and Assistants for cleaning all Textiles

B & L Bleachers' Bluings and Tints

Works and Office, ATLANTIC, MASS.

ANTHROLIC ACID

Reg. U.S. & Can. Pat. Off.

More Level Dyeings Brighter and Faster Shades
At a Lower Dyeing Cost

Chrome Mordants
Soluble Oils
Scouring Compounds
Chemicals for Textile Trade

ARKANSAS CO., Inc.

233 BROADWAY
NEW YORK CITY

"Get-To-Gether"
April 6, 7, 8, 9, 10, 1925

Twenty-first Annual

Knitting Arts Exhibition

The Commercial Museum, Philadelphia, Pa.

UNDER THE AUSPICES

NATIONAL ASSOCIATION OF HOSIERY AND UNDERWEAR MANUFACTURERS

More than two hundred manufacturers and dealers in Knitting Machinery, Knitted Underwear and Outerwear. Yarns, Mill Equipment and Supplies will again show their products at the 1925 Knitting Arts Exhibition.

The ever increasing number of exhibitors is sure proof that the trade goes to this market to buy and view the new devices and improvements that manufacturers and jobbers have to offer.

Old exhibitors will tell you this Exposition is the most practical, successful method of merchandising they know.

Held in connection with the annual meetings of the National Association of Hosiery and Underwear Manufacturers it affords a wonderful opportunity for buyers to attend these meetings and at the same time view your product.

If you seek to widen your market you will be represented by an exhibit at this creator of new business.

DON'T MISS THIS OPPORTUNITY

The cost of a space measuring 10 x 10 or 100 square feet is $150, and includes Sign, Floor Covering, Desk and three chairs and general decorations all ready for your exhibit.

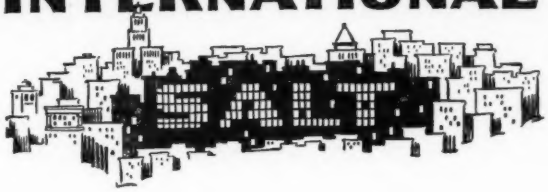
What better method of advertising will place you directly in touch with thousands of real buyers at so small an expenditure?

——Apply at once——

PERSONAL DIRECTION CHESTER I. CAMPBELL

Address all communications to Executive Offices, 329 Park Square Building, Boston, Mass.

INTERNATIONAL



An organization does not grow to large size unless there are sound reasons for its popularity. In the case of International Salt several factors operate to place it on a high plane in the minds of consumers.

Tremendous natural resources, refining facilities of large and scientific scope, together with a personnel imbued with the spirit of service, have established the advantages of International Salt for all industries.

INTERNATIONAL SALT CO., Inc.
SCRANTON, PENNSYLVANIA
NEW YORK OFFICE, 2 RECTOR STREET

SANDOZ
ANILINE DYES for ALL TRADES

We announce the latest addition
to our line of Alizarine Colors

ALIZARINE LIGHT GREEN GS

Excellent fastness to light and resistancy to the severest requirements of wearing fastness recommend the application of this color to the Woolen, Worsted and Silk Trade.

SANDOZ CHEMICAL WORKS
INCORPORATED

238-240 Water Street
New York, N. Y.

126 Market Street
Paterson, N. J.

36 Purchase Street
Boston, Mass.

145 Brenard Court
Charlotte, N. C.

813 Hospital Trust Bldg.
Providence, R. I.

12 South Front Street
Philadelphia, Pa.

UNITED CHEMICAL PRODUCTS CORPORATION

IMPORTERS, EXPORTERS AND MANUFACTURERS

YORK AND COLGATE STS., JERSEY CITY, N. J.

Manufacturers of

DIRECT FAST BLACK L

DIRECT FAST BLUE 4 G L

Also Announcing Our New Product

DIRECT FAST BLUE 2 G L

CHARLOTTE, N. C. ——BRANCHES—— PAWTUCKET, R. I.

THE DYER,

Calico Printer, Bleacher and Finisher.

The only Organ of these trades in Great Britain

43rd YEAR OF PUBLICATION

The Dyer has already a large circulation in the United States and throughout the American Continent.

Add the name of your firm to the list.

Published on the 1st and 15th of each month by

HEYWOOD AND COMPANY, Ltd., 150 Holborn, London, E. C. 1

Subscription 12/6 per annum, mail free.

HOWES PUBLISHING CO.,
90 William Street, New York.

.....192...

Please enter my subscription for the American Dyestuff Reporter for one year from date, for which you may bill me $5.00.

.....

.....

Canadian Postage $5.50: Foreign $6.00.

.....

COMPLETE

Laboratory Service

For Textile Mills

Dyestuffs Tested for
Identity, Fastness, Strength.

Dyestuffs on
Dyed Materials Identified.

THE facilities of our excellently equipped laboratory, and the services of our experienced textile chemists are available to textile mills on the basis of a moderate annual fee covering all routine work, or for special work upon a standard scale of prices.

Our wide experience in dyestuff chemistry, our modern apparatus, and, in particular, our files of type samples of over 3,500 different varieties of dyestuffs, make possible a most superior service.

Complete information will be furnished on request.

TINC TURA
Laboratories, Inc.

85 Fort Greene Place, Brooklyn, N. Y.

WOLF BRAND
Specialized Textile Chemicals

MONOPOLE OIL

Reg. Trade-Mark No. 70991

A specialized textile oil, highly concentrated and double sulphonated.

HYDROSULPHITE A. W. C.
for stripping and discharge printing

INDIGOLITE
for indigo discharge printing

CREAM SOFTENERS
Neutral sulphonated cotton softeners

GUMS
Arabic, Tragacanth, Karaya

TEXTILE GUMS
for printing

SOLUBLE OILS
Alizarine Assistants, Turkey Red Oils, Sulphonated Castor Oils

SIZING and FINISHING PRODUCTS
for Cotton, Wool and Silk

ADHESIVES
for every purpose

JACQUES WOLF & CO.
MANUFACTURING CHEMISTS AND IMPORTERS
PASSAIC, N. J.

Western Representatives:
ANILINE COLOR & CHEMICAL CO.
162 W. Kinzie St., Chicago 590 Howard St., San Francisco

A new work covering the theory and practice of wool scouring and wet finishing, including the physical and chemical properties involved.

THE WET PROCESSES *of the* WOOL INDUSTRIES

By JOHN SCHOFIELD, B.Sc., A.R.C.Sc.
Fellow of the Physical Society,
Huddersfield.

THE CHAPTERS

1. Water and Steam for Textile Purposes.
2. Wool and Chemical Reagents.
3. Oils and Fats.
4. Soap and Other Detergents.
5. Theory of Detergent Action.
6. Soap Solutions
7. Practical Scouring.
8. Milling.
9. Minor Processes.
10. Wool and Moisture.
11. The Drying Process.
12. Chemistry and Physics of the Wool Fibre.
13. Textile Cleanliness.

Each of these chapters is subdivided into minor sections in such a manner that all phases of the subject are fully discussed. Thus the chapter, "Practical Scouring," takes up in turn: Textile Dirt, Scouring of Raw Wool, the Solvent Process, Wool Scouring, the Detergent Problem, Backwashing, Scouring of Yarn and of Wool Piece Goods, Standard Scouring Routines, Preparatory Operations to Scouring of Pieces, Head and Tail Ends, Defects, Knotting, Mending, the Crabbing Process, Routine of Crabbing, Roll Winding, Scouring Principles, Color Bleeding, Loss of Strength, Scouring of Hosiery, etc.

A review of this volume appears under "Recent Literature" in this issue of the American Dyestuff Reporter.

428 Pages. 100 Illustrations. Complete with Tables, Graphs and an Index. Price, $5.00.

American Agents:

HOWES PUBLISHING COMPANY

90 WILLIAM STREET NEW YORK CITY

Time Proves All Things

FROM the Pyramids of the Pharaohs to the sky-scrapers of New York,—from Fulton's Claremont to the Leviathan ploughing her majestic way across the waters,—TIME has been the final arbiter.

Time can be our greatest enemy or our greatest friend. It can shatter our claims, or prove them up to the hilt. It can point the way to increased profits, or show us how to avoid loss.

Fifty years of constant, unremitting grind have served to demonstrate the enduring profit-producing quality and dependability built into

KLAUDER-WELDON
Dyeing - Bleaching - Scouring
MACHINES

If you care to write, we'll be glad to give you details of machines that, *after nearly fifty years* of service, are *still operating* economically.

And, upon request, a representative will gladly discuss with you your present or future dyeing problems or requirements.

Special Construction When Required

KLAUDER-WELDON DYEING MACHINE CO.
Originators, Pioneers and Leaders
Bethayres, Pa.

AMID DURON

Duron Emulsions

are stable and excel any lubricant for spinning of yarns. They increase production and guarantee a perfect carding, combing and spinning.

Art Silk Emulsions C or N Conc.

for winding artificial silk.

Amid Waxes

are far more effective in thread finishing than waxes emulsified by aid of our alkali or soap.

Amid Tallow

combines readily with all starches and far more evenly than Raw Tallow. It is neutral and non-odorous. Its ideal penetrating powers acknowledged.

Amid Fat Liquor
Amid Codolene
Solamid

admirably adapted for tanning, dressing and finishing of all kinds of leather.

Correspondence and Trial Orders Solicited

AMID DURON COMPANY
110 East 42nd Street **NEW YORK**

Röhm & Haas Company, Inc.

We have specialized in the manufacture of
Hydrosulfites
and Allied Products

Lykopon—Anhydrous Sodium Hydrosulfite for reducing indigo and vat dyes, for stripping, etc.

Formopon—Sodium Formaldehyde Sulfoxylate for discharge printing.

Indopon W—Indigo Discharge Assistant.

Formopon Extra—Basic Zinc Formaldehyde Sulfoxylate for stripping dyes.

Protolin—Soluble normal Zinc Formaldehyde Sulfoxylate for stripping dyes.

Protolin AZ—A special soluble Sulfoxylate for stripping dyes.

Our laboratory makes a special study of these products and their application, and appreciates the opportunity of co-operating with users in solving any problems which the employment of these products presents. Suggestions for stripping dyes from all classes of goods are supplied on request.

We also manufacture in our own plants a wide range of Heavy Chemicals, including Acids, Sodium Sulfide, Glauber's Salt, Aluminum Sulfate, Aluminum Chloride, liquid and crystals, Tartar Emetic, etc.

Office
40 North Front Street
PHILADELPHIA

Factories
Bristol and Bridesburg, Penna.
Branches
Chicago, Ill. Gloversville, N.Y.
Boston, Mass.

Made in America

SOL-AMIDINE BROWN B

equal to pre-war type of

TRISULPHON BROWN B

Fast to Acid, Alkali, Washing and Hot-Pressing

RECOMMENDED FOR PRINTING AND UNIONS

Sample submitted upon request

Manufactured by

JOHN CAMPBELL & COMPANY

75 Hudson Street — *American Dyestuff Manufacturers* — New York, N. Y.

BRANCHES

BOSTON CHICAGO PROVIDENCE CHARLOTTE PHILADELPHIA

"STANDARDS EVERYWHERE"

DIAX

Bleachers, Finishers and Dyers have complained that de-sizing compounds were expensive and hard to handle.

DIAX, made by the MALT-DIA-STASE CO., brought down the price and made its use easy.

DIAX, because it is better, is being used with great success by the largest Bleachers, Finishers, Printers and Dyers

Write us for Free Demonstration and Sample

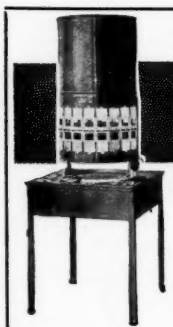
MALT-DIASTASE COMPANY

79 Wall St., New York City

LABORATORIES

58-64 Garden Street, Brooklyn, N. Y.

Wyckoff Avenue and Decatur Street, Evergreen, N. Y.



Will it Fade? Ask the

FADE-OMETER

Standardized Sunlight

The Boss Dyer

is held responsible for the quality of your dyeings. Doesn't it seem fair that he should be provided with the necessary equipment to do good work?

THE FADE-OMETER

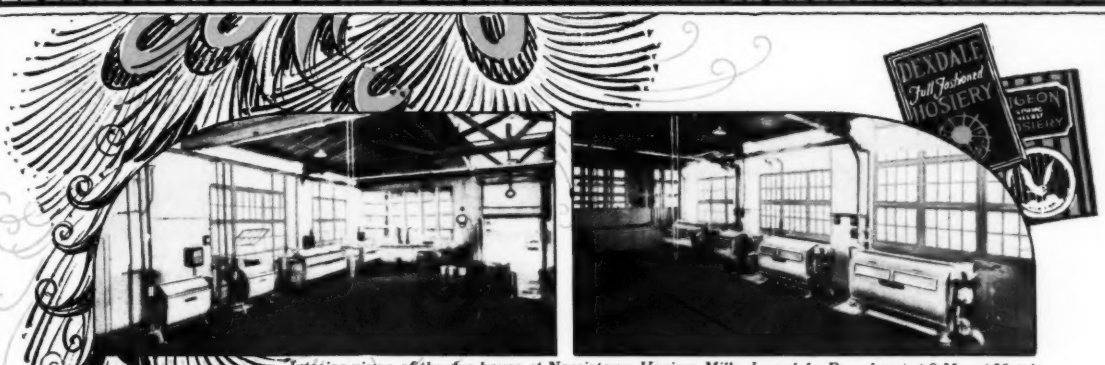
is helping hundreds of firms all over the world to improve the quality of their goods and, at the same time, save money in their dyestuff purchases. Bulletin No. 60 tells how. It's free for the asking.

Atlas Electric Devices Co.

364 W. Superior St. Chicago, Illinois

New York
F. SCHLAYER
25 Howard Street

London
A. D. LANG, LTD.
42, Berners Street, W-1



Interior views of the dye house at Norristown Hosiery Mills, Lansdale, Pa., showing 9 Monel Metal dyeing machines, manufactured and installed by SMITH-DRUM, INC., OF PHILADELPHIA, PA.

56 shades and no color "hang-overs" here—it's Monel Metal equipment

"COMPLETELY SATISFIED" best describes the way the Norristown Hosiery Mills feels about its Monel Metal dye house equipment. Their dye house at Landsdale, Pa., is thoroughly equipped with Monel Metal dyeing machines, utensils, etc.

The Norristown Hosiery Mills, marketing 56 shades of silk hosiery under "Dexdale" and "Pigeon" labels, has a reputation for quality to uphold. Monel Metal dyeing equipment insures maintenance of that high quality and guarantees economical operating costs at the same time.

Color after color can be dyed without trouble, for Monel Metal is so easily cleaned that each batch starts as though in a new machine. The consequent saving in floor space is evident. Monel Metal resists corrosion and is as strong as steel.

You can save money and trouble by using Monel Metal equipment. Write for the facts, today.

ASK FOR "LIST B" OF AVAILABLE LITERATURE

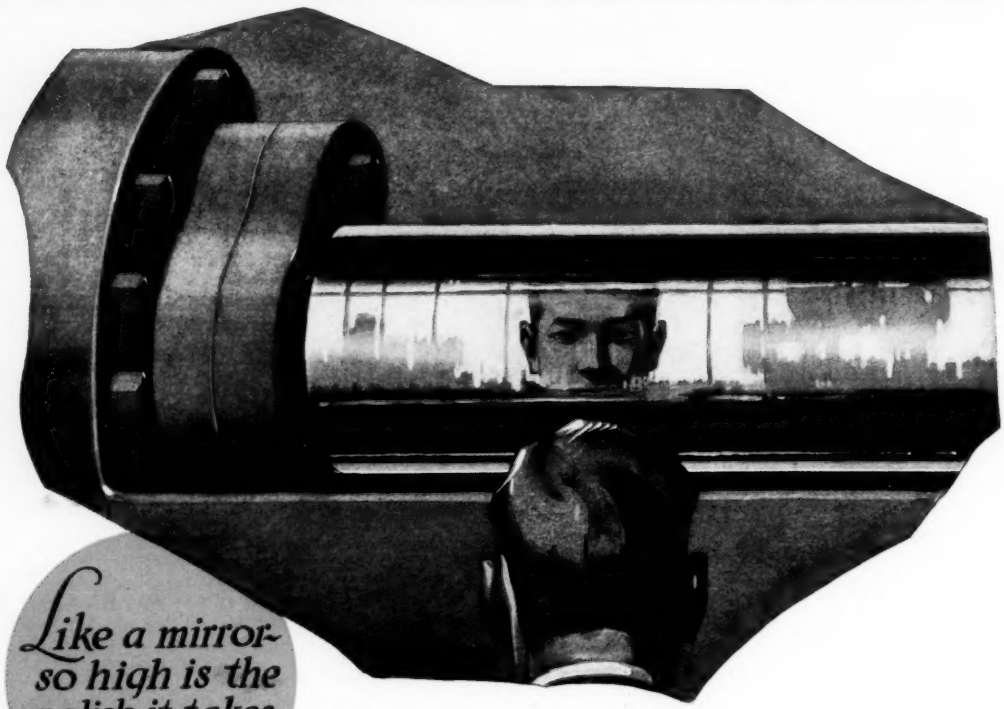
Monel Metal dippers, pails and scoops are available

General view of the plant of Norristown Hosiery Mills, at Lansdale, Pa.

THE INTERNATIONAL NICKEL COMPANY
67 WALL STREET NEW YORK CITY

INCo

Monel metal



Like a mirror—so high is the polish it takes

Thus,

because they are practically frictionless, MOnel Metal pump rods wear longer *and eliminate repacking troubles.*

STANDARD for the U. S. Navy—standard for many big oil refineries—standard for firms everywhere, who have tested the economy of Monel Metal pump rods.

The properties of Monel Metal effect economies in three major ways:

1. Their mirror-like surface and glass-like polish
   —reduce packing and rod friction
   —prevent hardening of the packing and minimize maintenance costs,
2. Their immunity to rust and freedom from corrosion
   —prevent pitting while idle
   —eliminate rust-scale deposited in packing, causing scoring of rod,
3. The great strength and inherent toughness of Monel Metal
   —permit the use of smaller rod than the use of bronze allows
   —offer greater resistance to the erosion caused by super-heated steam.

The superiority of Monel Metal is a proven fact. We want you to find out for yourself how economical Monel Metal really is.

SEND FOR "LIST B" OF AVAILABLE LITERATURE

***WRITE** distributor nearest you for details of the special money-back trial offer.*

Whitehead Metal Products Company
67 Washington Street North, Boston, Mass.

Whitehead Metal Products Company of New York, Inc.
261 Canal Street, New York
Branch House, 725 Arch St., Philadelphia, Pa.
Branch House, 215 Frelinghuysen Ave Newark, N. J.

Williams & Company, Inc.
901 Pennsylvania Avenue, Pittsburgh, Pa.

J. M. Tull Rubber & Supply Company
150 Marietta Street, Atlanta, Ga.

Steel Sales Corporation
129 South Jefferson Street, Chicago, Ill.
Branch House, 843 Book Bldg., Detroit, Mich.

Edward Schwartz Mill Supply Co., Inc.
520 Toulouse Street, New Orleans, La.

Eagle Brass Foundry Company
21 Spokane Street, Seattle, Wash.

Pacific Foundry Company
Harrison and 18th Streets, San Francisco, Cal.

Robert W. Bartram
129 Duke Street, Montreal, Province Quebec

Peckover's, Ltd.
Foot of West Market Street, Toronto, Ont.

THE INTERNATIONAL NICKEL COMPANY
67 WALL STREET NEW YORK CITY

INCo

MOnel metal

Contents of This Issue

February 23, 1925

The Identification of Types of Artificial Silk 105
A. K. Johnson

Sizing with Dextrine Soap..... 108
(*Translated by Ismar Ginsberg, B.Sc., Chem. Eng.*)

"Stoko" Size Tablets..... 112
Dr. H. E. Hager

Foreign Dyes Imported Through the Port of New York During January..... 113

Proceedings of the American Association of Textile Chemists and Colorists:
January Meeting of the Southern Section. 117

Recent Developments of New Dyes and Chemicals Abroad—*A Paper* by Chas. P. Walker 117

Twenty-Eighth Council Meeting..... 118

Twenty-Sixth Research Committee Meeting 119

Correction 120

Applicants for Membership..... 120

Changes of Address..... 120

Withdrawn 120

Editorials:

Fire or Smoke?..... 121

More Anent Fastness Guarantees..... 122

Recent Literature.
The Wet Processes of the Wool Industries 123

Practical Hints on the Production of Bright Colors on Textile Fabrics—Part X.... 124
Raffaele Sansone

Dyestuff Tables 126

Inquiry Department 128

Alum in the Beater Coloring of Sized Paper 129
Walter C. Holmes

Technical Notes from Foreign Sources..... 133

Recent Patents 136

NATIONAL
Solantine Blue 4 GL

A brilliant blue of greenish tone

When excellent fastness to light is required on cotton, silk or artificial silk, National Solantine Blue 4 GL is recommended.

It is readily soluble, and dyes level in all classes of machines. A test will demonstrate its superior fastness and dyeing properties.

National Aniline & Chemical Company, Inc.
40 Rector Street, New York, N. Y.

Boston
Providence
Hartford
Philadelphia
Charlotte
Chicago
San Francisco
Toronto
Montreal

NATIONAL DYES
FOR COTTON

Calco

Calco and Basic Colors

Being one of the largest makers in America of Dimethylaniline, it was only logical that Calco should undertake the establishing of a comprehensive line of Basic Colors. Consequently, ever since its inception, a tremendous amount of time and effort has been devoted to the standardization of the various dyestuffs that comprise this group. Nor have we been content with the mere knowledge that these products are "right" from a chemical standpoint. On the contrary chemical analyses are only used as an *indication* of purity and *not* as final approval. ***The most rigid tests are made in our application laboratories on each batch of color to make sure it will answer the purposes for which it is to be used.***

To illustrate, Calco Methylene Blue is tested on paper for the paper trade; it is standardized on cotton for the cotton dyers; printing tests on cotton are especially made for the cotton printers; and, if a shipment is to be made to a lake manufacturer a color lake is prepared and matched against type before the delivery is released.

Our aim is to furnish you with the Calco standard best suited to your needs. May we assist you in selecting the proper type?

THE CALCO CHEMICAL COMPANY
Bound Brook N. J.

New York Boston Philadelphia Chicago

Canadian Representative: Dillons, Ltd., Montreal, Toronto

AMERICAN DYESTUFF REPORTER

"Circulated Everywhere Dyestuffs Are Used"

Devoted to the practical application of dyestuffs in all industries; especially to textile chemistry—the science and practice of scouring, bleaching, dyeing and finishing.

VOLUME XIV NEW YORK, FEBRUARY 23, 1925 NUMBER 3

The Identification of Types of Artificial Silk

Inadequacy of Present Methods—Types of Artificial Silk Dealt With—Chemicals or Solutions Used—Preparation of the Samples—Procedure in Each Test for Each Type of Artificial Silk

By A. K. JOHNSON

Lowell Textile School

THE rapidly growing importance of artificial silks with respect to both consumption and extension of applications, the increase in commercial appearances of the different types on the American market, and the known differences in dyeing properties between the types makes it very desirable to have an easy and clearly distinguishing method for the identification of the "chemical" varieties.

While numerous methods of testing such types are to be found in the literature, experience with many of these methods would seem to indicate that they are not sufficiently distinctive in their showings as carried out by the casual or infrequent experimenter, to allow of interpretation. This may perhaps be due:

(1) To the need for adherance to close conditions in the preparation of the testing solutions or in the making of the tests which conditions are not given in sufficient detail for universal reproduction.

(2) To the fact that with some types of artificial silk the differences in the appearances of the tested samples may be so slight as to require considerable experience before the differences can be interpreted, even with standards for comparison.

Simplicity of the Tests

The scheme for identification of the types of artificial silks, compiled below, would seem to possess considerable advantage to dealers or handlers of such silks in that the chemicals used are familiar to them, they present no difficulties in preparation, in storing or in use, and the results furnished appear easy to interpret without special experience. In the case of distinguishing Cuprammonium from Viscose silk it is necessary to adhere closely to similar and specified conditions, and is best to compare the behavior of the unknown sample with that of a standard sample in the same physical condition (tightness or looseness of the filaments in a yarn or waste).

Types of Artificial Silks Dealt With

The "chemical" types of artificial referred to in this scheme are:

(1) Cellulose derivatives, or esters, so-called acetate silks: (a) Lustron, (b) Celanese.

(2) Regenerated or hydrated cellulose: (c) Nitro silks, Tubize, etc., (d) Cuprammonium silk, (e) Viscose silk.

Chemicals or Solutions Used

The following chemicals or solutions are employed:

1. Glacial or strong acetic acid, water white.

2. Diphenylamine in concentrated sulphuric acid c.p. or commercial grade. One gram of the diphenylamine is dissolved in 100 grams of cold acid. It may be added to the silk by means of a medicine dropper or a dropping bottle with convenience.

3. Dyestuffs possessing differences in dyeing affinities for the various types, and kept in stock solutions (as 1 gram in 1,000 c.c. of water). Such dyes may be:

(a) Methylene Blue, used for distinguishing Lustron from Celanese.

(b) Pontamine Scarlet B, or its equivalent, and

(c) Sulphur Khaki Y, or its equivalent, both used separately for staining Cuprammonium silk heavier than Viscose.

4. Millon's reagent, made by dissolving metallic mercury in its own weight of concentrated, c.p. nitric acid, then diluting the solution with an equal volume of water. Sometimes a new lot of this reagent does not work (perhaps due to the nitric acid used), and so each lot should be tested by moistening scoured wool or real silk with it,

gently warming and noting the production of a brick red color on the animal fiber. This reagent, if found reactive should be kept in a small, tightly stoppered bottle, when it will usually retain its staining power for a long time. It is used as a stain for animal fibers—here for real silk.

Preparation of the Samples

For use in the differential staining tests it is desirable to have the artificial silk fibers of a light or white color,

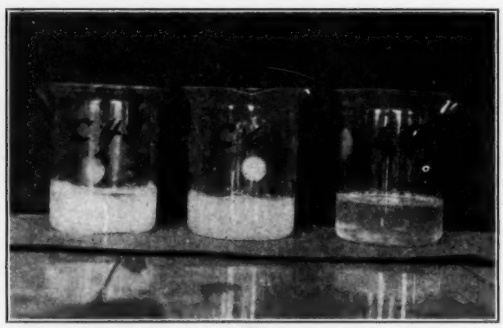


Fig. 1—*Illustrating the Appearance of the Solutions of Celanese and Lustron in Strong Acetic Acid After the Addition of Water to Each.*

C 45—0.05 *Grams Celanese Silk Dissolved in* 30 *c.c. of* 45 *per cent Acetic;* 15 *c.c. of Water Added. The Copious White Mass Produced Is Just Beginning to Settle.*

C 60—0.05 *Grams Celanese in* 60 *Per Cent Acetic Plus* 15 *c.c. Water.*

L 60—0.05 *Grams Lustron in* 60 *Per Cent Acetic Plus* 15 *c.c. Water.*

Observe the Marked Difference Between the Celanese Solutions and the Lustron Solution.

---

and free from foreign substances like oil, dressing or bleaching materials. The use of weighed samples (¼ to ½ gram if available) is recommended for the Cuprammonium Viscose tests.

In comparing the stained samples it helps to have the yarns or fibers in a similar condition of looseness or tightness of twist of compression.

Real vs. Artificial Silk

Millon's Reagent, Brick Red with Real Silk (*Test No.* 1).—The mixed or separate kinds of fibers are covered with a few drops of Millon's reagent, and gently warmed (not boiled) when a brick red color will develop in the presence of real silk in a few seconds. Artificial silks remains white or unchanged.

If it is desired to preserve the stained sample it may be washed with dilute nitric acid until all the mercury salts are gone and then with water until free from acid.

Acetate Silks

Silks Soluble in Glacial Acetic Acid (*Test No.* 2).—Acetate silks only have a ready or appreciable solubility in glacial acetic acid or hot acetic acid of greater strength than 65 per cent. If the acid solution is diluted with water the dissolved silk will precipitate out either as a milky unstable "emulsion" or as a translucent glutinous material, depending upon the amount and kind of silk in the solution. This property may be made use of in testing mixed silks, as in waste artificial silks.

A tiny thread suffices for the test if more is not to be had. If the thread dissolves in the cold or hot strong acetic acid, it is an acetate silk.

If the thread does not dissolve and circumstances demand its use for other tests it may be washed free of acid and used in the diphenylamine test for Nitro silk.

Acetate Silks: Lustron vs. Celanese

Deep Blue with Methylene Blue, Lustron (*Test No.* 3).—Immerse a thread of the oil-free silk in 10 to 15 c.c. of the stock Methylene Blue (1 to 1,000), acidify with 1 to 2 c.c. acetic acid and bring rapidly to a boil while agitating the silk in the heating liquor. As soon as the liquid is boiling pour off and wash the sample thoroughly in clean water.

Lustron retains a deep blue color.

Celanese reduces to a faint blue, relative to the Lustron Blue, in a very few seconds of washing.

Soluble in Boiling 45 *to* 50 *Per Cent Acetic Acid; Precipitated as an Opaque Bulky Mass on Addition of Water —Celanese—*(*Test No.* 3*a*).—There appears to be an appreciable difference in the strength of acetic acid necessary to readily and completely dissolve the two silks, Lustron and Celanese. Roughly determined in a qualitative way (using 0.05 grams of thread and 30 c.c. portions of acid of varying strengths) is has been found that Celanese silk will dissolve in acid of 45 to 50 per cent strength near the boiling temperature, whereas to dissolve Lustron under similar conditions requires an acid of 60 to 65 per cent.

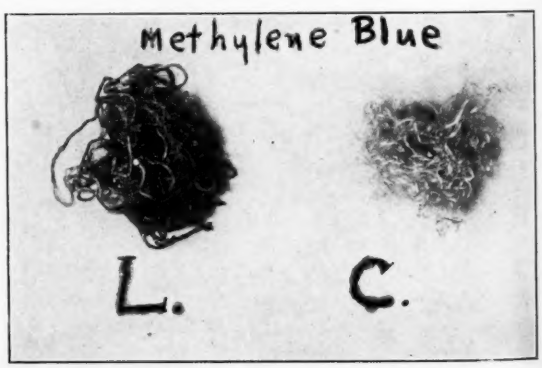


Fig. 2—*Showing the Difference in Staining Depth of Lustron* (*L.*) *and of Celanese* (*C.*) *with Methylene Blue.*

Furthermore, there is a notable difference in the behavior of the solutions obtained above on dilution with water. The 30 c.c. of acid containing the Celanese silk in solution, when poured into 15 c.c. of water, gave a bulky, opaque mass which soon settled to a white flocculent sediment. The Lustron solution, on similar treatment, produced barely any opaqueness and some evidence of a translucent sediment.

Hence, if a thread of the silk dissolves in boiling 50 per cent acetic acid, and gives this characteristic turbidity upon this dilution it may be taken as strong evidence as being Celanese silk.

Acetate vs. Regenerated Celluloses

Melting in the Burning Test—Acetate Silk—(Test No. 4).—The burning test serves very clearly to distinguish the acetate silks (Lustron or Celanese) from the regenerated cellulose silks (Nitro, Cuprammonium, Viscose).

The fibers to be tested may be twisted into a tight wad and then cautiously approached to a match flame, without being brought into actual contact with the flame. Under the influence of the heat acetate silks are seen to "melt" or "fuse" back, forming a black knob or globule on the end which precedes the small, sputtering, relatively slow burning flame down the thread. If the flame be extinguished and the knob cooled this will be found to be somewhat hard and resistant to crushing.

The regenerated cellulose silks do not melt back but burn quietly and readily like bleached cotton fiber. The odor from the fumes is the same as that coming from burned cotton.

This test serves to distinguish the two general classes and can be made upon a very small amount of material.

Nitro vs. Cuprammonium or Viscose Silk

Deep Blue with Diphenylamine—Nitro Silk—(Test No. 5.)—Treatment of the water-moistened thread with a 1 per cent solution of diphenylamine in concentrated sulphuric acid causes the fibers of Nitro silk to assume an immediate deep blue color. The blue fibers are completely dissolved in a few seconds after yielding a blue colored solution.

Fig. 3—*Picturing the Relative Effects of Pontamine Scarlet B Upon Viscose (V.) and Cuprammonium (C.A.) Silks in the Staining Reaction*

This test appears to be specific for Nitro silk, since the fibers of other types of artificial silks are not colored blue.

Cuprammonium vs. Viscose Silk

Selective Staining with Appropriate Dyestuffs (Test No. 6).—When Acetate and Nitro silks have been proved absent, a carefully but easily regulated differential staining test with dyestuffs which have a greater affinity for one of the types may be used. In carrying out the test it is highly desirable to have all staining conditions identical, using the unknown fiber in conjunction with both known samples for comparison after staining.

Fig. 4—*Difference Between Viscose Silk (V.) and Cuprammonium Silk (C.A.) with Sulphur Khaki Y.*

Any dyestuff which possesses a sufficient difference in affinity may be employed. Two which the author has found to give satisfactory results are: Pontamine Scarlet B or its equivalent, and Sulphur Khaki Y, both of which under the conditions of staining have a sufficiently greater staining power for Cuprammonium to make identification easy when compared to standards in the same physical condition and stained under exactly similar circumstances.

The following tried suggestions with Pontamine Scarlet B serve to standardize the staining procedure and to eliminate sufficiently all factors except the difference in affinity:

1. Equal weights of sample and standards, as ¼ or ½ gram.
2. One per cent of color based on weight of air dried fiber.
3. Equal volumes of bath, as, for ½ gram, made up to 200 c.c. with water.
4. Immersion of samples into the liquor at the same time and the same temperature (as in a common heating bath), heating to about 150 deg. Fahr. for ten minutes. The samples may then be washed thoroughly and compared, wet or dry. Viscose is the lighter stained sample.

With Sulphur Khaki Y, which may be applied for a check test, the total dyestuff needed for a 3 per cent dyeing on all the samples may be dissolved in a common

(*Continued on page* 130)

Sizing with Dextrine Soap

Effect of the Water Used in the Mill—Mechanical Treatment of Fabrics—Varying Composition According to Conditions—Composition of Sizing Materials—Discussion of Results—Effect Produced by Additions—Comparison of Samples—Sizing Bright-Colored Figured Cotton

(Translated by Ismar Ginsberg, B.Sc., Chem. Eng.)

[*The following article, translated from Textilberichte, 1924, pages 387-388, is unsigned. It contains a number of very interesting results that are obtained by the use of dextrine soap sizing compositions which are given in tabular form and discussed in detail in the article. —Trans.*]

THE beginner experiences considerable trouble in making up sizing compositions which give good results. This is something that every practical textile man has gone through. The textbooks and the handbooks that are used in the plant and studied at school give a great variety of formulas for making up sizing compositions, all of which possess a certain value of their own but which cannot be used in practical work for many reasons. It is also impossible and impracticable for the experienced textile man to give a formula or formulas for sizing compositions which will work well under all conditions. In other words, it is impossible to obtain a single formula for a sizing composition which can be used without any further ado under all conditions.

The Effect of the Water Used in the Mill

The first question that arises is what effect has the character of the water that is available in the plant and that is used in the sizing operation. One thing must be borne in mind before all others, and that is that the different substances which enter into the composition of sizing preparations, in spite of the fact that they may be purchased on the market under guarantee to be of standard and unchangeable quality, nevertheless do show many differences in the different batches used. The designation of grades is only of general interest and simply tells whether the product is of good or bad quality. Very often the analysis of the substance is not given or not required; and this, from the standpoint of the effectiveness of the sizing compositions made from these substances, is really the most important consideration.

It therefore remains that the only really useful way in which to determine the availability and applicability of a certain substance of certain grade for the preparation of sizes is to make a practical test with the material. This, of course, presupposes that these tests are carried out in the proper fashion and that the correct scientific interpretation is given to the results obtained from them.

The sizing effect which is obtained by the use of a certain definite sizing preparation depends on another factor besides the composition of the size and the character of the materials employed in making it. The mechanical treatment to which the textile fabrics are subjected before, during or after the sizing operation is also of very great importance. This refers, for example, to the way in which the fabrics are calendered.

The Mechanical Treatment of the Fabric

It makes quite a difference in the results of the sizing operation if the textile materials are first given a strong calendering before they are sized or if they are merely sized without this preliminary treatment. It is also very significant, so far as sizing results are concerned, whether the right or the wrong side of the fabrics, or both, is made to come in contact with the cylinders. Then, again, in the case of calenders whose rolls are engraved or covered with designs of one sort or another, entirely different conditions prevail than when the calender rolls are entirely smooth; that is, so far as the effect produced in the sizing operation is concerned. Furthermore, the effects produced are different in the case of mangles than in that of calenders, etc.

For example, if it is desired to obtain a fine Atlas effect with the aid of smooth calender rolls, in the case of loosely woven goods, then not only must the sizing preparation be most carefully made up but the cloth must be passed first between calender rolls which are warmed up (this applies in certain special cases only) before the doubled pieces of cloth are allowed to run through the sizing preparation. The preliminary hot calendering operation is for the purpose of drying the cloth. It is therefore quite understandable how it is possible for a certain formula of sizing preparation to give good results in one case and poor results in another; how in one case it will give the desired effect and in another case it will produce results that are not at all desirable. It is also evident that the amount of sizing preparation which will penetrate into the goods will also depend on the character of the surface.

Varying the Composition According to Conditions

If all these various facts and conditions are kept in mind, then the question arises, how is it possible to vary the proportions of the various ingredients that enter into the make-up of the size and the character of

the constituents themselves, and between what limits can this variation take place, in order to obtain a size that will give good results in all cases? It is the intention of the writer to give a very simple example of one case where this can be and has been done with success. This particular sizing composition is formed basically of dextrine and soap.

The example mentioned above is entirely a practical one and is actually taken from practical operation in a textile mill. Hence it is hoped that it may have some practical value for the readers of this article.

Tabulation of Sizes and Results

Table I, printed below, contains the different results obtained in practical operation with the use of variations of a composite sizing preparation which contains 20 per cent of dextrine and 8 per cent of soap. These are the basic figures which are used as units in the experiments.

The first tabulation which follows shows the different compositions of the sizing preparations used, and the second tabulation indicates the results obtained. In the first tabulation the figures represent percentages of the different ingredients on the weight of substance employed, and in the second tabulation the symbols "l," "m" and "s" stand for the words "light," "average" and "heavy" as regards the weights of the finished materials. The color of the fabric is indicated as light or dark by means of the mark "x" in the proper column of the second tabulation. Three finishes of fabrics are listed—linen-like, twill and Atlas.

In the case of sample No. 25, 2 per cent of the addition is gelatine.

The following can be said regarding the basis on which the sizing preparations were made in accordance with the formulas which are recorded in this tabulation.

In the first place, this sizing preparation containing just soap and dextrine will give a soft, dull, lustrous effect on white goods. If the preparation is to be used in sizing goods which are of the average weight, as, for example, in the case of Sample 17 in the following tabulation, Table II, then it is necessary to use about half the amount of dextrine and a bare half the amount of soap. In other words, the sizing composition will now contain just 10 per cent of dextrine and only 3.5 per cent of soap in place of 20 per cent of dextrine and 8 per cent of soap. Then, the variation in the percentages of dextrine and soap used in the various sizing preparations will take place within rather wide limits. The variation is particularly wide because of the various additions that are made to the sizing preparation.

The following tabulation Number II shows the character of the materials that were sized with the preparations described in Table I:

TABLE I—COMPOSITION OF SIZING MATERIALS

	BASIC RATIOS		PERCENTAGES OF MATERIALS ADDED										
					INDIVIDUAL INGREDIENTS								
NO.	Dextrine	Soap	Total Sizes	Total Fats, Etc.	Potato Flour	Wheat Flour	Potato Starch	Wheat Starch	Corn Starch	Tapioca Starch	Stearine	Glycerine	Fatty Acid
1	0.01	0.2	7.5	6.0	.....	.....	.....	.....	.....	1.18	.....	6.0	.....
2	0.15	0.2	7.75	6.0	.....	.....	.....	.....	.....	1.75	.....	6.0	.....
3	0.2	.....	7.0	.....	.....	.....	.....	5.0	2.0	.....	.....	.....	.....
4	0.25	0.2	5.0	2.0	1.9	.....	.....	.....	1.12	.....	.....	.....	2.0
5	0.25	.....	7.5	.....	.....	.....	5.0	.....	2.5	.....	.....	.....	.....
6	0.25	0.2	5.0	2.0	.....	.....	1.9	.....	1.15	.....	.....	.....	2.0
7	0.26	.....	4.0	4.0	.....	.....	.....	.....	.....	.....	.....	4.0	.....
8	0.3	.....	11.5	.....	.....	.....	.....	9.0	2.5	.....	.....	.....	.....
9	0.31	0.2	6.4	3.4	.....	.....	.....	1.6	1.1	.....	.....	1.6	1.8
10	0.35	0.25	6.9	4.1	2.5	.....	.....	.....	2.0	.....	.....	.....	2.075
11	0.375	0.5	6.0	6.0	.....	.....	.....	.....	.....	.....	.....	6.0	.....
12	0.4	0.25	6.4	2.4	.....	2.5	.....	.....	1.5	.....	.....	.....	2.37
13	0.4	0.3	9.0	5.0	.....	.....	.....	.....	.....	4.0	.....	5.0	.....
14	0.45	0.25	6.9	2.4	.....	.....	2.5	.....	2.0	.....	.....	.....	2.375
15	0.48	0.25	6.65	2.4	.....	.....	2.5	.....	1.75	.....	.....	.....	2.375
16	0.5	0.3	3.5	1.5	.....	.....	.....	2.0	.....	.....	.....	1.5	.....
17	0.5	0.4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
18	0.56	1.0	28.0	2.5	.....	.....	.....	.....	.....	25.5	.....	.....	2.5
19	0.6	0.2	9.25	0.125	8.0	.....	.....	.....	.....	.....	1.25	.....	.....
20	0.65	0.2	4.5	1.5	.....	.....	3.0	.....	.....	.....	1.5	.....	.....
21	0.65	.....	1.0	1.0	.....	.....	.....	.....	.....	.....	.....	1.0	.....
22	0.7	0.375	4.5	2.0	.....	.....	.....	2.5	.....	.....	.....	2.0	.....
23	0.7	0.375	4.5	2.0	.....	.....	.....	2.5	.....	.....	.....	2.0	.....
24	0.8	0.4	1.5	1.5	.....	.....	.....	.....	.....	.....	.....	1.5	.....
25	0.8	0.55	10.0	6.0	.....	.....	.....	4.0	.....	.....	.....	1.5	4.5
26	0.8	.....	1.0	1.0	.....	.....	.....	.....	.....	.....	.....	1.0	.....
27	0.85	0.2	6.5	1.5	.....	.....	2.0	.....	.....	3.0	1.5	.....	.....
28	0.9	0.4	6.5	4.0	.....	.....	.....	2.5	.....	.....	.....	4.0	.....
29	1.0	0.5	1.9	1.9	.....	.....	.....	.....	.....	.....	.....	1.9	.....

TABLE II—SAMPLES

NO.	Fabric Linen	— Background — Twill	Atlas	Figured with Colors	Background Color Light	Dark
1.....	m	.....	.....	.....	.....	x
2.....	m	.....	.....	.....	.....	x
3.....	m	.....	.....	.....	.....	x
4.....	.....	.....	.....	.....	x	.....
5.....	.....	m	.....	.....	x	.....
6.....	.....	.....	.....	.....	x	.....
7.....	.....	.....	m	.....	.....	x
8.....	l	.....	.....	.....	.....	x
9.....	.....	.....	.....	.....	x	.....
10.....	l	.....	.....	l	x	.....
11.....	m	.....	.....	.....	.....	x
12.....	m	.....	.....	.....	x	.....
13.....	.....	.....	.....	.....	x	.....
14.....	.....	.....	.....	.....	x	.....
15.....	i	.....	.....	.....	x	.....
16.....	s	.....	.....	.....	x	.....
17.....	.....	.....	m	.....	.....	x
18.....	m	.....	.....	.....	.....	x
19.....	.....	.....	.....	.....	x	.....
20.....	m	.....	.....	.....	.....	x
21.....	.....	.....	.....	.....	.....	x
22.....	.....	.....	m	.....	.....	x
23.....	m	.....	.....	.....	x	.....
24.....	m	.....	.....	.....	x	.....
25.....	m	.....	.....	.....	.....	x
26.....	.....	.....	.....	.....	x	.....
27.....	l	.....	.....	.....	.....	x
28.....	m*	.....	.....	.....	x	.....
29.....	l	.....	.....	.....	x	.....

*Loose.

Discussion of Results

Textile materials which correspond to sample number 17 can be sized soft with preparations that do not contain either dextrine or soap. These preparations can contain stearin, tapioca starch, soap, or gelatine; or if a highly lustrous effect is to be produced, they may contain borax, stearin and oleic acid. When the basic size preparation is employed for this purpose a somewhat less soft effect is produced than in the latter case. Furthermore, when these sizing materials are employed it is possible to subject the goods to a strong calendering action, and at the same time the proper stiffness is secured in the fabrics and all these effects are obtained without injuring the color in any manner or rendering it hazy. It is not easy, of course, to recommend the use of sizing preparations unless the character of the figuring that is carried out on the fabrics is known. However, it is hoped that these details will be of some value to the textile man who is experimenting with sizing preparations, and at least they can form a basis on which other preparations may be made up.

The Effect Produced by Additions

The next matter to be considered in this article is the effect that was produced by the addition of various other substances to the sizing preparation. It is advantageous in this case to compare samples 1 and 2 in the above tabulations. It is found that sample 1 is sized only a little softer than sample 2. The results show that when the goods are first calendered before being sized, about 10 per cent of the dextrine soap size used as a sizing material may be saved. It is necessary that a very thorough calendering operation be carried out, however, in order to obtain such a saving. On the other hand, under these conditions it is very easy to spoil the color of the goods, so that it is advisable to test a sample of the fabric at first and if good results are obtained, then the entire lot of material can be treated in this manner, but with the greatest care.

Sample 3 in the above tabulation is seen to contain no additive matter which possesses a softening action on the fabrics. In this sizing mixture there is no soap. The result is that the goods possess a harder handle than others of exactly similar nature; this effect may also be strengthened by the addition of alumina emulsions. Hence the usual materials that are added to the sizing composition in this case may well be omitted. On the other hand, when light-weight fabrics are treated with this composition it is found that the percentage of basic sizing ingredients used is too small.

Samples Four to Seven

The samples marked 4 to 7 are composed on the same basis. The most noteworthy differences that appear are that the sizing number 4 gives a somewhat softer handle than number 7, the first in the case of light-weight goods, and the latter in the case of average weight goods (with the addition of glycerine in the place of soap as the basic ingredient of the sizing composition and when subjected to stronger calendering). Sizing compositions numbers 5 and 6 give a fabric of stiffer feel. When somewhat heavier materials are sized with composition number 5, it is found that it is necessary to increase to some degree the percentage of potato starch in the mixture, so that it attains a maximum of 5 per cent; at the same time the soap is omitted from the sizing preparation.

If the results obtained with the sizing compositions included from numbers 8 to 11 are studied, it will be seen that the lighter-weight fabrics, those of more loosely woven character, require more of the basic ingredients of the size, soap and dextrine than the other fabrics that were tested. It was also found that the darker colored samples of goods required more of these basic ingredients than did the lighter-colored fabrics. In general, the sizing composition which is shown in test number 10 may be employed in sizing the cheaper varieties of shirtings.

By examining the results obtained in these tests and recorded in groups in the tabulations it is possible to see that there is a sort of definite relationship between the compositions of the sizing preparations. The percentages of different additive substances employed in making up these preparations are so figured out that sizing number 8 gives a hard finish, number 9 a com-

paratively smooth handle to the fabrics that are treated with it, and in the case of number 11 the handle of the goods is very soft, a direct contrast with that of sizing number 8. In other words, sizing number 8 is the typical opposite of sizing number 11. When these compositions are used on exactly the same kind of goods, then the first will give a hard handle to the product and the second a soft handle. It is also possible to give the goods that are sized with sizing composition number 11 a high calender finish without diminishing the soft feel of the goods.

Sizing Bright Colored Figured Cotton Goods

The sizing compositions described under numbers 12 to 16, inclusive, may be used with good results in the sizing of brightly colored, figured cotton materials. In the case of sizing composition number 14 a fairly stiff handle is obtained when a high calendering finish is given to the fabric, and this is also true when the weave of the fabric is somewhat open. Sizing composition number 12 gives the same results but not to such a marked degree. In the case of sizing composition number 13 the additive substances are chosen in such a manner that the effect is not impaired when figured textile fabrics are treated with the composition. Sizing preparation number 16 was found to be a standard size for heavy-weight shirting fabrics.

Sizing composition number 17 has been described above. It may be compared with the composition designated number 21, which is different from the former only in that it contains somewhat more dextrine and in that the four-tenths of a part of soap is replaced by 1 per cent glycerine. In spite of that the sizing composition is well suited for sizing such materials as cheap furniture covers and the like. The size holds the fabric together very well.

Sizing preparation number 18 is indicated for use in special cases when a dull calender finish is given to the fabrics. Note is to be taken of the comparatively large proportions of additive matters used in making up this sizing preparation.

The fact that sizing composition number 19, under the condition that the same average stiff handle of finished goods is obtained, contains more of the additive ingredients than sizing number 20 is accounted for by the weave of the goods. In such cases the attention of the textile man is not called so much to the color of the goods. At least the layman cannot tell that there is much difference.

The same thing holds good of sizing compositions numbers 22 and 23. The goods treated with sizing composition number 22 are somewhat softer in handle than those treated with number 23. It is perhaps going too far afield to try to derive conclusions therefrom relative to the differentiating action of the weave of the goods on the hardness of the handle. It is possible to use sizing composition number 20 as a calender size, but the goods sized with it in this fashion possess a comparatively stiff handle.

The sizing preparations numbers 24 and 25 may be used for sizing fabrics employed in making bed covers. They are in fact ordinary fillers, and the composition number 25 gives a harder finish than 24. On the other hand, good results are obtained with fabrics sized with preparation number 25, when they are run through the friction calender.

Sizing preparations numbers 26 to 29 are for use on light-weight fabrics. These compositions fill up these fabrics in a very effective manner. Composition number 26, which is of simple constitution, gives a typically sized fabric, possessing the typical handle of goods treated in such a manner. It is, however, not well suited for sizing figured fabrics. The remaining three sizing preparations yield fabrics with fairly hard hand. Sizing composition number 27 is suitable for use on the calender roll, while number 28 can be used on the friction calender and number 29 on both.

This explains the results that are recorded in the above tabulations. These results are very enlightening. They show what can be accomplished with the various sizing compositions made with soap and dextrine as a base. They also show that it is necessary to watch the results very carefully if the proper handle in the finished textile is to be obtained. So far, however, they do not show that there is any very definite law on which it is possible to prepare sizing compositions in order to obtain certain definite, desirable results. It is perhaps a matter that does not lend itself to such treatment. At any rate it is something that is good food for thought on the part of the textile man who is concerned with this phase of the finishing process. It would be interesting to see the results obtained by others along these same lines given due publicity. Such publicity would be of marked advantage in revealing the practice that is followed in this field.

BUREAU OF STANDARDS ISSUES LEAFLET ON SOAP AND BOOKLET ON ULTRA-VIOLET RAYS

Two new publications issued by the U. S. Government Bureau of Standards are entitled "Master Specifications for Liquid Soap (for Laundry Use)" and "A Radiometric Investigation of the Germicidal Action of Ultra-Violet Radiation."

The first is a five-page leaflet outlining the general requirements of a liquid soap, methods of inspecting and testing and other useful information that should be of great interest to users of soap as well as to manufacturers. The 50-page booklet on ultra-violet radiation is No. 495 of the Scientific Papers of the Bureau of Standards. Its contents, illustrated with photographs and diagrams, gives a complete technical description of the investigation made and comprises much useful data for one interested in the action of ultra-violet rays.

"Stoko" Size Tablets

A Communication from Dr. H. E. Hager, Grasselli Dyestuff Corporation

Under "Technical Notes from Foreign Sources" the AMERICAN DYESTUFF REPORTER on page 66 of its January 26th issue called attention to a note, "Making Soluble Starch," covering a new German invention which claims the preparation of a water soluble starch by means of "Activin."

In connection with this it will undoubtedly be of interest to know that the Bayer Company, of Leverkusen, Germany, for whom the Grasselli Dyestuff Corporation is the sole importers in the United States, have recently brought out a product called "Stoko" Size Tablets, which combine very valuable properties with the above mentioned one, that of rendering starches soluble.

It is claimed that by the use of these tablets, according to the patented process, a size paste can be obtained which could so far be manufactured only by boiling starches for a long time with strong caustics, diastafor, etc., as well as by the addition of such compounds as paraffin, bees' wax, stearic acid, cocoanut oil, soap, glue, glycerin, etc. Such additions are not necessary when using "Stoko" tablets.

Potato starch, or any other kind of starch, can, by the addition of these tablets and boiling, be turned into a perfectly clear solution which at the same time contains the gluey and fatty substances necessary for the size paste. A great many advantages can be derived from the use of "Stoko" tablets, as, for example:

(1) The size paste can be prepared without keeping an exact temperature, and yet it will always have the same even constitution.

(2) The paste penetrates very easily into the thread, which will have a full, soft feel.

(3) The warp will run easily, will not stick and will not dust.

(4) The shades in colored warps will not be covered, but remain entirely clear.

(5) Addition of any kind of wax or fats is not necessary.

(6) Compounds which cannot be saponified, like paraffin, etc., are not present.

(7) Warps treated with "Stoko" tablets can easily be desized.

PREPARATION OF THE SIZE PASTE

The potato, or any other starch, is as usual pasted with cold water. The "Stoko" tablet which has the physical appearance of a cake of maple sugar (4 by 5 inches) is cut up, and added, and then the mass is boiled up with steam until it has the desired consistency.

One drop of the paste taken between thumb and index finger should be as clear as glass, transparent and gummy. By boiling longer, the paste becomes very thin, and it can be thinned still further by the addition of hot water. If the size paste is made in a steam jacketed kettle under pressure, it is only necessary to boil from 5 to 10 minutes; in an open kettle, however, for about twenty minutes, and open kettles should be kept well covered. If direct steam is used, it is advisable to start with 10 per cent less water than is used in a jacketed kettle, as it has been found that the condensed water will make up about this amount. Even mixtures and perfect liquid sizing pastes are in this way obtained. The following recipes are recommended:

FOR COTTON WARPS

One obtains the best results by using one tablet for 50 pounds of potato starch, keeping the customary quantity of water, which is about 10 to 15 times the amount of potato starch in ordinary size pastes.

FOR YARNS

20 pounds potato starch
20 pounds wheat starch
44 gallons water
1¼ tablet

gives about 45 gallons size paste. The same recipe can be used for bleached yarns, replacing the potato starch partly, or entirely, with wheat starch. The yarns can be weighted by the addition of 10 to 20 pounds Epsom salt to the size paste. It is an important advantage of the "Stoko" tablets that their large fatty content permits of a large addition of Epsom salt to the size paste, which will result in an appreciable weighting of the warps and yarns without affecting the full, smooth feel of suppleness.

For a hard, firm size is recommended:

80 parts rice starch
3 "Stoko" tablets
66 pounds Epsom salt
2¼ pounds Japan wax
1⅛ pounds Monopole soap

giving 66 gallons of paste.

Starch and "Stoko" tablets are boiled together to the proper consistency and to this is then added the Monopole soap, which was previously dissolved, and to which the Epsom salt has been added. Lastly the wax is added, and the whole boiled for 15 minutes.

In a similar way, as for sizing, the "Stoko" tablets are used in finishing; the pastes are very readily absorbed by the goods and leave the colors perfectly clear, a factor of importance when the pieces have to be calendered.

The usual finishing size is made up from 20 pounds potato starch and one-half "Stoko" tablet, boiling for 20 minutes with 50 gallons of water, and adding 10 pounds Epsom salt, and, if desired, 1 pound of Monopole soap.

Erwin Cotton Mills, Durham, N. C., is installing two indigo warp dyeing units, said to be the largest of their kind, in their plants at Durham and Duke, N. C. The machines will dye 100 warps a day, each warp having 420 ends, 6,000 yards long.

Foreign Dyes Imported Through the Port of New York During January

Compiled by the Chemical Division of the Bureau of Foreign and Domestic Commerce in Collaboration with the Chemical Division of the United States Tariff Commission

KEY TO ABBREVIATIONS OF MANUFACTURERS' NAMES

1—THE SIX LEADING GERMAN COMPANIES

A—Actien-Gesellschaft fur Anilin-Fabrikation, Berlin. Founded 1873.
B—Badische Anilin-und-Soda-Fabrik, Ludwigshafen-on-the-Rhine. Founded 1865.
By—Farbenfabriken, vormals Friedr. Bayer & Co., Leverkusen-on-the-Rhine. Founded 1862.
C—Leopold Cassella & Co., Frankfort-on-the-Main. Founded 1870.
K—Kalle & Co., A. G., Biebrich-on-the-Rhine. Founded 1870.
M—Farbwerke, vormals Meister Lucius & Bruning, Hochst-on-the Main. Founded 1862.

2—THE SMALLER GERMAN COMPANIES

BK—Leipziger Anilinfabrik Boyer & Kegel, Furstenberg, near Leipzig. Founded 1882.
CG—Chemikaliewerk Griesheim G. m. b. H., Griesheim-on-the-Main. Founded 1882.
CJ—Carl Jager G. m. b. H., Anilinfarbenfabrik, Dusseldorf. Founded 1823
GrE—Chemische Fabrik Griesheim-Electron, Offenbach-on-the-Main. Founded 1842.
L—Farbwerk Mulheim, vormals A. Leonhardt & Co., Mulheim-on-the-Main. Founded 1879
tM—Chemische Fabriken, vormals Weiler ter Meer, Uerdingen-on-the-Rhine. Founded 1877.
WD—Wulfing, Dahl & Co., A. G. Barmen. Founded 1842.

3—SWISS COMPANIES (ALL AT BASEL)

DH—Farbwerke vormals L. Durand, Huguenin & Co. Founded 1871.
G—Anilinfarben-und Extract-Fabriken, vormals Joh. Rud. Geigy. Founded 1764.
I—Gesellschaft fur chemische Industrie. Founded 1885.
S—Chemische Fabrik, vormals Sandoz & Co. Founded 1887.

4—DUTCH AND FRENCH COMPANIES

FA—Farbwerk Ammersfoort, Ammersfoort, Netherlands. Founded 1888
NF—Niederlandische Farben-und-Chemikalienfabrik Delft, Delft, Netherlands. Founded 1897.
CN—Compagnie Nationale de Matieres Colorantes et Produits Chimiques. Founded 1917. (Etablissements Kuhlmann merged with this company in 1923.)
P—Societe Anonyme des Matieres Colorantes et Produits Chimiques St. Denis (formerly A. Poirrier). Founded 1830.

5—ENGLISH COMPANIES

Bro—Brotherton & Co., Ltd., City Chambers, Leeds.
BAC—British Alizarine Co., Ltd., Manchester
BD—British Dyestuffs Corporation, Ltd., London.
Cl Co.—The Clayton Aniline Co., Ltd., Clayton, Manchester.
CV—The Colne Vale Dye & Chemical Co., Ltd., Milnsbridge, Huddersfield.
Hol—L. B. Holliday & Co., Ltd., Huddersfield.
Scot—Scottish Dyes, Ltd., Grangemouth.

Owing to the length of these dye import tables if published in full only the common name of each dye is listed, with its Schultz number and total poundage imported and its designation as competitive or non-competitive. Readers may obtain more specific information as to the names of the different types imported under each color, together with the manufacturer of each type, by writing to the Chemical Division of the Bureau of Foreign and Domestic Commerce, Washington, D. C.

THE imports of coal-tar dyes for January, 1925, through the port of New York totaled 393,525 pounds, with an invoice value of $350,206. Imports of dyes through other ports include: Boston, 9,458 pounds, valued at $8,177; Hartford, 1,000 pounds, valued at $980, and Philadelphia, 1 pound, valued at $13. The total imports of dyes during January were 403,984 pounds, with an invoice value of $359,376.

There is also included a supplementary report covering additional dye import figures for the month of December which were not included in the report for that month.

Dyes Remaining in Bonded Customs Warehouse

Date	Coal-Tar Dyes and Colors (pounds)	Coal-Tar Intermediates (pounds)
August 31, 1924.....	507,338	1,081,287
September 30, 1924.....	559,661	1,111,656
October 31, 1924.....	552,556	1,050,037
November 30, 1924.....	533,760	1,031,460
December 31, 1924.....	575,051	1,086,108

Seven Leading Dyes by Quantity Imported

	(pounds)		(pounds)
Ciba Violet R....	44,090	Rhodamine 6G ...	11,075
Patent Blue V....	14,228	Anthraflavone G..	10,279
Algol Brown R..	12,839	Ind. Yellow	10,183
Ind. Blue GCD...	11,088		

Per Cent by Country of Shipment

Germany	57%	Belgium	2%
Switzerland	32%	Canada	1%
England	3%	France	1%
Italy	3%	Other countries	1%

The dyes in this report are grouped by Schultz numbers, and in the case of those which could not be identified by Schultz number the classification according to the ordinary method of application was adopted. As the pastes and powders of the vat dyes vary widely in strength and quantity, each vat dye has been reduced—in nearly every case—to a single-strength basis.

The designation of "†" for competitive and "*" for non-competitive indicates the appraisement basis for

the assessment of the ad valorem duty in paragraph 28 of the Tariff Act of 1922. Those dyes without designation are doubtful, pending further investigation.

DYES OF COAL-TAR ORIGIN [1]

Schultz No.	Name of Dye and Manufacturer	Quantity (pounds)
19	†Fast Light Yellow	400
22	†Xylene Light Yellow	300
28	Hansa Yellow G	500
58	Mordant Yellow	100
118	†Geranine	300
125	Diazine Black	300
154	Palatine Chrome Brown	100
175	*Ponceau for Silk	220
227	Brilliant Croceine	100
296	Cotton Yellow	893
319	Diamine Scarlet	200
320	Bordeaux	100
339	Brilliant Orange G	1,000
344	†Diamine Brown	1,000
348	Diphenyl Brown BN	2,756
358	Diphenyl Red	4,663
364	Diazo Brilliant Black	1,000
373	Congo Orange	200
391	Benzo Blue	21
392	Toluylene Orange	1,543
449	Trisulphon Brown	3,190
456	†Benzo Fast Blue	110
457	*Trisulphon Brown GG	5,003
474	Diamine Green B—(C)	10
496	Setoglaucine—(G)	1,102
512	Magenta	200
515	Methyl Violet	200
516	Crystal Violet	689
518	Ethyl Purple	500
523	Fast Green	441
537	*Methyl Blue for Silk	882
539	Soluble Blue	175
541	Brilliant Sky Blue 5G—(By)	50
543	†Patent Blue	14,228
551	Erio Chrome Azurol B	100
552	Chromal Blue	220
559	Victoria Blue B	310
562	Fast Acid Blue	440
564	Naphthalene Green	1,102
565	Acid Blue B	400
571	*Rhodamine 6G (single strength)	11,075
573	†Rhodamine B (single strength)	6,435
587	Eosine	50
606	Phosphine	3,500
607	Rheonine	500
608	Euchrysine	1,146
613	Quinoline Yellow	210
617	Diamine Fast Yellow FF—(C)	100
624	Modern Violet N Extra—(DH)	441
637	Gallamine Blue Extra Paste—(G)	4,806
659	Methylene Blue	200
661	Thionine Blue	200
663	New Methylene Blue	500
672	Azo Carmine	1,635
673	Azo Carmine B	500
681	*New Fast Gray	3,020
687	Methylene Heliotrope Extra Strong—(M)	100
690	Diphene Blue R—(A)	1,000
705	Indamine 6R	485
720	Sulphur Black	110
748	Hydron Blue R Paste—(By)	11
752	Kryogene Direct Blue	100
754	Kryogene Direct Blue 3B Extra	500
759	*Anthraflavone G (single strength)	10,279
760	*Indanthrene Golden Orange G (s. s.)	4,950
761	Indanthrene Golden Orange R (s. s.)	2,641
762	Indanthrene Scarlet G	286
763	Indanthrene Dark Blue BO (s. s.)	956
765	Indanthrene Green B	4,862
767	Indanthrene Violet RR	620
768	Indanthrene Violet B	200
778	†Alizarine (Synthetic) Paste	6,375
779	Alizarine Orange	250
782	*Alizarine Brown	5,236
783	†Purpurine—(By)	974
792	Cibanone Orange R (single strength)	2,556
794	Cibanone Black B Paste—(I)	1,433
795	Cibanone Yellow R Paste—(I)	661
797	Alizarine Claret R Paste—(M)	1,000
800	Anthracene Blue	829
804	*Alizarine Blue S	600
810	Helindone Yellow 3GN (single strength)	5
816	Algol Red 5G (single strength)	1,600
819	*Algol Red FF, R (single strength)	1,598
820	Algol Brilliant Violet R (single strength)	400
821	Algol Brilliant Violet 2B (single strength)	4,100
822	Algol Brilliant Orange FFR (s. s.)	380
827	*Indanthrene Claret B Extra	1,200
830	Indanthrene Red R (single strength)	400
831	*Indanthrene Red BN	7,131
832	Indanthrene Violet BN (single strength)	5,191
833	*Algol Olive R (single strength)	2,592
834	Algol Gray (single strength)	1,588
838	Indanthrene Blue RS (single strength)	1,800
840	†Indanthrene Blue 3G (single strength)	1,104
842	Indanthrene Blue GCD (single strength)	11,088
843	Indanthrene Blue GC	441
848	Indanthrene Gray B	2,400
849	†Indanthrene Yellow	10,183
851	Alizarine Direct Blue B—(M)	400
852	Alizarine Irisol D, R	220
855	*Alizarine Pure Blue B	1,331
856	*Alizarine Astrol	2,057
858	†Alizarine Saphirol	220

[1] This table includes imports through the port of New York to the amount of 393,525 pounds, and also 9,458 pounds through the port of Boston, 1,000 pounds through the port of Hartford and 1 pound through the port of Philadelphia.

Schultz No.	Name of Dye	Quantity (pounds)
860	Cyananthrol G	588
862	Alizarine Blue Black	8,504
863	Anthraquinone Blue Green	100
865	†Alizarine Direct Green G	2,261
867	Indanthrene Brown B (single strength)	2,548
869	*Algol Brown B	12,839
870	Algol Corinth R (single strength)	200
871	Indanthrene Red Violet RRN	451
873	Helindone Brown AN (single strength)	10
881	Brilliant Indigo 4B Paste—(B)	2,557
890	Ciba Yellow G Paste—(I)	551
892	Helindone Green G Paste—(M)	200
901	Ciba Violet B (single strength)	44,090
904	Helindone Brown G (single strength)	1,700
907	Ciba Scarlet (single strength)	4,150
910	Helindone Pink (single strength)	1,936
	Thioindigo Pink BN ExtraPaste—(K)	1,913
911	Ciba Orange G Paste	661
912	Vat Red B (single strength)—(B)	2,330
913	Thioindigo Orange R (single strength)	808
918	Helindone Red 3B (single strength)	2,607
923	*Ursol	470

UNIDENTIFIED DYES

Acid Dyes

Name of Dye and Manufacturer	Quantity (pounds)
Acid Pure Blue R Supra—(G)	1,102
Acid Violet CBB—(B)	100
Aliarine Direct Blue RXO Powder—(B)	300
Aliarine Direct Violet E2B—(M)	500
Alizarine Direct Violet ER—(B)	300
Alizarine Leveling Blue CA—(C)	500
*Alizarine Rubinol	2,654
Aliarine Supra Blue A Powder—(By)	242
*Brilliant Milling Blue B—(C)	500
*Brilliant Pure Yellow 6G Extra—(By)	200
Cloth Fast Yellow G—(I)	661
*Erio Fast Fuchsine BBL—(G)	2,424
Fast Acid Green BB Extra—(M)	500
Fast Acid Marine Blue HBBX—(B)	100
Guinea Blue A, A4B, V, 4VB—(A)	520
Guinea Fast Red 2R—(A)	500
Kiton Fast Red 4BL—(I)	1,980
Milling Red GA—(A)	25
Metanil Red 3B Extra—(By)	441
Polar Orange R—(G)	1,102
Radio Yellow R—(C)	1,000
*Sulphon Yellow 5G—(By)	50
*Supramine Black BR—(By)	265
Supramine Brown G—(By)	100
Supramine Red B—(By)	300
Wool Fast Blue BL—(By)	441
Wool Fast Red 3B—(B)	100
*Wool Violet RC—(G)	110
Xylene Milling Blue AE Conc.—(S)	500

Name of Dye and Manufacturer	Quantity (pounds)
Vat Dyes	
Ciba Pink BG Paste—(I)	1,323
Ciba Printing Black B Paste—(I)	309
Cibanone Blue 2G Powder—(I)	110
Cibanone Deep Blue BO Powder—(I)	110
Cibanone Orange 6R Powder—(I)	220
Grelanone Red 2B Paste—(GrE)	560
Grelanone Scarlet G Paste—(GrE)	560
Helindone Blue 3G Conc. (s. s.)—(M)	1,000
Helindone Brilliant Green D5G Paste—(M)	10
Helindone Brilliant Green 5G Powder—(M)	5
*Helindone Gold Orange 13G Paste—(M)	10
*Helindone Gold Orange 13G Powder—(M)	2
Helindone Pink B (single strength)	1,600
Helindone Printing Black RD Paste—(M)	2,000
Hydron Brown	5,200
Hydron Pink (single strength)	3,551
*Hydron Scarlet (single strength)	1,666
Hydron Violet B (single strength)—(C)	110
Indanthrene Blue BCD (single strength)	4,934
†Indanthrene Blue BCS (single strength)	7,500
Indanthrene Brilliant Blue R (single strength)	610
Indanthrene Brown G (single strength)	7,667
Indanthrene Brown 3R (single strength)	1,010
*Indanthrene Golden Orange 3G Paste—(By)	400
Indanthrene Green (single strength)	4,300
Indanthrene Gray (single strength)	17
*†Indanthrene Pink B, R (single strength)	5,245
Indanthrene Printing Black BR Paste	700
Indanthrene Red GG (single strength)	6,448
Indanthrene Red Violet RR (single strength)	1,500
Thioindigo Blue 2GD Conc.—(K)	50
Thioindigo Rose RN Extra Paste—(K)	500
Thioindigo Violet 2R Powder—(K)	275
Vat Brown RT Paste—(By)	2
Vt Brown RT Powder—(By)	1

Mordant and Chrome Dyes

Acid Alizarine Gray G—(M)	1,000
Alizarine Blue G, R—(BC)	110
Alizarine Gerano'e B—(By)	1,389
Alizarine Red SU Powder—(B)	1,000
Anthracene Bordeaux R Powder—(B)	100
†Anthracene Chromate Brown EB—(C)	200
*Brilliant Chrome Blue 2B—(DH)	110
Chrome Azurine G—(DH, I)	551
Chrome Printing Bordeaux B Powder—(I)	110
Chrome Printing Orange 2R Powder—(I)	110
*Chrome Printing Red B, Y	771
Chromorhodine 6GN Extra—(DH)	220
Chromocitronine 3R—(DH)	110
Chromoxane Brilliant Violet SB—(By)	200
Eriochrome Green L—(G)	331
Metachrome Black AG—(A)	200
Metachrome Blue GFL—(A)	10
Metachrome Blue Black 2BX—(A)	3,300

Name of Dye and Manufacturer	Quantity (pounds)
Metachrome Brilliant Blue 3RL—(A)	100
Metachrome Olive Brown G Powder—(Bro.)	1,000
Metachrome Violet 2R—(A)	100

Direct Dyes

*Artificial Silk Black G—(By)	99
Azonine Direct Blue B Paste—(C)	200
Azonine Direct Yellow RR Paste—(C)	200
Benzo Fast Black L—(By)	1,440
*Benzo Fast Bordeaux 6BL—(By)	100
Benzo Fast Brown RL—(By)	441
*Benzo Fast Gray BL—(By)	300
Benzo Fast Heliotrope BL—(By)	100
Benzo Fast Heliotrope 4BL—(By)	500
Benzo Red 12B—(By)	651
Brilliant Benzo Green B—(By)	200
*Brilliant Benzo Fast Violet BL—(By)	242
Brilliant Congo Violet R—(A)	200
Brilliant Fast Blue 3BX—(By)	200
Brilliant Sky Blue 8G Extra—(By)	882
Brilliant Sky Blue 2RM—(By)	3,000
Chicago Red III—(G)	1,653
Chlorantine Fast Green B—(I)	441
Chlorantine Red 3B—(I)	220
*Chlorazol Drab RH—(BD)	100
*Chlorazol Fast Brown RK—(BD)	472
*Chlorazol Fast Orange AG—(BD)	100
Columbia Red OB—(A)	300
Developed Brilliant Scarlet 2BL—(C)	276
Developing Blue B—(A)	400
Diamazine Bordeaux BL—(C)	452
Diamine Azo Fast Green G—(C)	882
Diamine Azo Fast Violet R—(C)	331
Diamine Fast Violet FFBN—(C)	500
Diaminogene GG—(C)	882
*Dianil Fast Violet BL—(M)	100
Diazanil Pink B—(M)	100
Diazo Brilliant Blue 2BL Extra—(By)	399
Diazo Brilliant Green 3G—(By)	2,389
Diazo Brilliant Orange 5G Extra—(By)	200
*Diazo Brilliant Orange GR Extra—(By)	100
*Diazo Brilliant Scarlet 2BL Ex. Conc.—(By)	379
Diazo Brilliant Scarlet G Extra—(By)	298
Diazo Brilliant Scarlet ROA Extra—(By)	441
Diazo Brown G—(By)	300
Diazo Brown 3G—(By)	882
Diazo Fast Yellow 2G—(By)	937
Diazo Fast Violet BL—(By)	300
Diazo Fast Violet 3RL—(By)	200
Diazo Indigo Blue 4GL Extra—(By)	639
Diazophenyl Black V—(G)	1,102
Diphenyl Fast Bronze B—(G)	551
Direct Cutch Brown GR—(I)	551
Fast Cotton Brown 4RL—(A)	5
Fast Cotton Rubine B, 3B—(A)	200
Fast Cotton Violet 4R—(A)	100
Naphthamine Light Brown 2G—(K)	300
Pyrazol Fast Brown B—(S)	1,000
†Pyrazol Orange R Conc.—(S)	500
Rosanthrene Fast Bordeaux 2BL—(I)	220
Universal Blue Black C—(C)	5

Rapid Fast Dyes

Rapid Fast Bordeaux B Paste—(GrE)	100
Rapid Fast Orange RG Paste—(GrE)	100
Rapid Fast Red B Paste—(GrE)	100
Rapid Fast Red BB Paste—(GrE)	100
Rapid Fast Red GL Paste—(GrE)	25
Rapid Fast Red GZ Paste—(GrE)	100
Rapid Fast Red 3GL Paste—(GrE)	100
Rapid Fast Yellow G Paste—(GrE)	100

Sulphur Dyes

*Cross-Dye Green B—(BD)	5,574
†Cross-Dye Green 2G Conc.—(BD)	2,240
Katigene Deep Black BC—(By)	5
Pyrogene Brilliant Blue 6B—(I)	110
Thional Brilliant Blue 6BS Conc.—(S)	881
†Thionol Brown O—(BD)	472

Spirit Soluble and Color Lake Dyes

Brilliant Helio Green GG Extra—(By)	100
Helio Bordeaux BL Powder—(By)	924
Helio Fast Red RBL Powder—(By)	5
*Helio Marine 2GL Paste—(By)	11
Helio Marine RL Powder—(By)	5
Japan Black MBG—(B)	300
Oil Red G—(BC)	64
Paper Fast Bordeaux B—(By)	200
Stone (Lithol) Fast Orange R Powder—(B)	250
†Stone (Lithol) Fast Orange RN Powder—(B)	300

SUPPLEMENTARY LIST OF IMPORTS OF DYES THROUGH NEW YORK AND OTHER PORTS FOR DECEMBER, 1924

Dyes

	Pounds	Value
New York	30,668	$24,467
Boston	208	263
Milwaukee	400	648
Philadelphia	4	13
Providence	4,600	4,028
Total	35,880	$29,419

DYES OF COAL-TAR ORIGIN

Schultz No.	Name of Dye and Manufacturer	Quantity (pounds)
281	Hansa Yellow G	1,000
283	Bismarck Brown	25
339	Brilliant Orange G	200

(Continued on page 137)

Proceedings of the American Association of Textile Chemists and Colorists

The American Association of Textile Chemists and Colorists

President
LOUIS A. OLNEY
Lowell Textile School, Lowell, Mass.

Vice-Presidents
WILLIAM D. LIVERMORE E. H. KILLHEFFER

Secretary
WALTER E. HADLEY
5 Mountain Avenue, Maplewood, N. J.

Treasurer
WINTHROP C. DURFEE
516 Atlantic Avenue, Boston, Mass.

Councilors
RALPH F. CULVER GEORGE A. MORAN
ARTHUR E. HIRST WILLIAM K. ROBBINS
WILLIAM R. MOORHOUSE WALTER M. SCOTT

LOCAL SECTIONS AND THEIR OFFICERS

Northern New England Section—
John F. Bannan, Chairman, M. T. Stevens & Sons Co., North Andover, Mass
A. K. Johnson, Secretary, Lowell Textile School, Lowell, Mass.

Rhode Island Section—
Walter S. Williams, Chairman, Mount Hope Finishing Co., North Dighton, Mass
Albro N. Dana, Secretary, Franklin Process Co., Providence, R. I

New York Section—
E. F. L. Lotte, Chairman, National Silk Dyeing Co., Paterson, N. J
Daniel P. Knowland, Secretary, Geigy Co., 89 Barclay Street, New York City.

Philadelphia Section—
Elmer C. Bertolet, Chairman, Philadelphia Textile School, Philadelphia, Pa.
Percival Theel, Secretary, Philadelphia Textile School, Philadelphia, Pa.

Southern Section—
Harold M. Chase, Riverside and Dan River Cotton Mills, Danville, Va.
Harry W. Ormand, Secretary, Union Bleachery, Greenville, S. C.

JANUARY MEETING OF THE SOUTHERN SECTION

The Southern Section of the American Association of Textile Chemists and Colorists held its second meeting at Charlotte, N. C., January 16, 1925.

Through the arrangements of the Entertainment Committee, composed of C. H. Stone, Malcomb McKenzie and W. H. Willard, a delightful dinner was served at the Southern Manufacturers' Club.

Brown Mahon, Chairman of the Southern Section, presided.

An address of welcome was delivered by J. Mack Hatch, of the American Yarn & Processing Company, Mount Holly, N. C.

A review of the organization of the Southern Section was given by the Chairman. Following the remarks of the Chairman, C. H. Stone, Southern manager of the Grasselli Dyestuff Corporation, gave a very interesting review of the developments of the American dyestuff industry during 1924. Interesting figures were given to show the development of American dyes, as regards both quantity and variety of production.

A paper, "Recent Developments of New Dyes and Chemicals," was read by Chas. P. Walker, of the Grasselli Dyestuff Corporation. This paper is published in full herewith.

David Clark, editor of the Southern Textile Bulletin, gave a very interesting talk on the "Child Labor Amendment."

The meeting was then turned into a general discussion concerning the dyeing and finishing of artificial silk. Since this subject held the common interest of all it was agreed to give it first place in the plans for the next meeting.

The Chairman, Mr. Mahon, stated that it was necessary for him to resign the chairmanship, and as the Vice-Chairman, Mr. Carey, has moved from this Section, nominations were called for to fill the vacancies. Harold M. Chase, of Danville, Va., was elected Chairman, and Malcomb McKenzie, of Cramerton, N. C., Vice-Chairman.

On account of the absence of the newly elected Chairman the Vice-Chairman took charge of the remaining part of the meeting.

A committee composed of the Chairman, Vice-Chairman and N. R. Vieira was selected to designate the time and place of the next meeting.

A vote of thanks was given to the members of the Entertainment Committee.

H. W. ORMAND, Secretary, Southern Section.

Recent Developments of New Dyes and Chemicals Abroad

By CHAS. P. WALKER

Mr. Chairman and Gentlemen: The very few words that I have to say to you this evening will be concerning dyes and allied products of recent developments. Some of these products I have used, the others have come to my notice through my associations.

In the short time necessarily devoted to this talk, it will

be impossible to go into great detail, but if I succeed in arousing interest in products that spell "progress" I shall feel that I have not spoken in vain.

The outstanding purpose of this Association is to gather all available information on the application of products whereby textiles may become better, and it would seem to me that any improvements in the finished product must necessarily include better dyeing.

For many years past the word "Indanthrene" has stood for a superior grade of dyes applied to cotton. Furthermore, it was a trade name covering the products of one dye maker. The trade got to the point of dissociating the name from the maker and associating it with the product. The word Indanthrene now signifies a class of vat colors of a specific fastness and that, the highest, irrespective of who is the manufacturer. Among the new products to be mentioned are two Indanthrene colors: Indanthrene Brilliant Blue R, a very clear marine blue, and Indanthrene Blue Green B Double Paste, which is the turning point between a blue and a green.

Another important vat color of less recent origin is Hydron Pink, a very clear shade of pink of which there are two marks. One of these marks has been produced in America.

A matter of great potential interest is the dyeing of Celanese, one of the more recent artificial silks. This product has apparently no affinity for the usual cotton colors. The British Celanese Company, in conjunction with British Dyes, Ltd., brought out a series of colors under the mark S. R. A. These colors dye only Celanese, leaving all other fibers clear, and with them it is possible to produce multicolored effects in greater variety than heretofore.

Printing is a branch of textile production that has called for intense study, and apparently there are still improvements to expect. So far the printing of fast colors has meant that the beauty and clearness of shade has to be sacrificed. We now have available a series of colors under the name of "Rapid Fast Colors," which combine the beauty of basic dyes with the fastness of vats and of further interest in that they are infinitely simpler in application than the fast colors now in general use. No preparation of the goods is required, nor do the prints require prolonged steaming for develop ment; in fact, these colors develop overnight simply by hanging. The range so far includes three shades of red—a Bordeaux, a blue and an orange.

Closely allied to these colors are the naphthols for the dyeing of cotton. The well-known Naphthol Red now has several relatives. Grieshiem offers seventeen bases and seven naphthols with which it is possible to produce a full range of shades—green excepted. Of particular interest is the yellow shade produced on the Yellow Base with Naphthol ASG which has the distinction of being the fastest yellow so far produced, particularly to light, and is also of surpassing clearness.

Let us now turn to one of the oldest, if not oldest dyes known—Indigo. One would suppose that at its age nothing new could remain to add to its history. However, under the name Indigosol, we now have Indigo in such a form that hydrosulphite is not required. Several marks are offered, representing advancements in refinement. So far, this product has only been practically applied to wool, though laboratory work would indicate that its application to cotton is merely a matter of time. While at present its cost is high, it has the advantage of simplicity on application which will appeal to the dyer of occasional odd lots.

Of passing interest though not for application to textiles are the Helio Fast Colors for the production of lakes used in paints. These lakes are exceeding fast to light and are very bright in shade. We believe future shades of "Duco" will call for some of these colors.

Turning now to products other than dyes, we find one of great interest, with which the horror of moth holes is removed. I refer to Eulan. used for giving wool a permanent moth proofing. This product is not in any sense an insecticide.

In the realms of textile finishing, there are many products noticed every year. Mostly they are just new names. Stoko Tablets, however, are an innovation which has proved of great interest in Europe. They are used in all cases where fats and waxes are called for in sizing of yarns or piece goods.

Since the introduction of basic colors, tannic acid has been the chief medium in preparing cotton for the dyeing of these bright colors, being used in conjunction with antimony in some form involving a long dyeing process. While beauty of shade is produced the price paid is, that the colors rub, the fiber gets harsh and the shade is not very fast to light. We now have available a product—Katanol—which has the advantage of being simple to apply; it leaves even raw cotton in a soft spinnable condition, needs no fixation with antimony, and cotton so prepared and dyed with basic colors produces very superior results with regards to fastness and clearness of shade. Katanol is offered in two forms—the O mark for dyeing and the W mark for printing.

The Twenty-Eighth Council Meeting

The Twenty-Eighth Council Meeting of the American Association of Textile Chemists and Colorists was held at the Engineers' Club, Boston, Mass., January 9, 1925.

The following members were in attendance: Prof. L. A. Olney, W. D. Livermore, W. K. Robbins, W. C. Durfee, G. A. Moran, A. E. Hirst, W. M. Scott, R. F. Culver, W. R. Moorhouse, J. F. Bannan, W. E. Hadley.

The following applicants were admitted to membership:

Active Members

Buck, Robert E., Southern manager, Arnold, Hoffman & Co. Box 1268, Charlotte, N. C.

Burke, Henry B., sales engineer and chemical consultant, Hussong Dyeing Machine Company, Groveville, N. J. 1624 Riverside Drive, Trenton, N. J.

Collins, John J., salesman and demonstrator, Beacon Color & Chemical Company, Boston, Mass. Box 2813, Boston, Mass.

Craig, Harry N., industrial chemist, Apex Chemical Company, Philadelphia, Pa. 300 Washington Terrace, Audobon, N. J.

Folsom, Herbert A., chemist, Chemical Company of America, Providence, R. I. 130 Moore Street, Providence, R. I.

Hartley, John, dyestuff dealer. 807 Commercial Building, Charlotte, N. C.

Pettingill, Lee D., dyer, Lewiston Bleachery & Dye Works. 378 College Street, Lewiston, Me.

Pfromm, John, chemist, J. H. & C. K. Eagle, Inc. 1427 W. Lynn Street, Shamokin, Pa.

Shelton, Elbert M., research chemist, Cheney Bros. Company. 83 Walnut Street, S. Manchester, Conn.

Snoop, John, colorist, Consolidated Piece Dye Works, Paterson, N. J. 251 Summer Street, Passaic, N. J.

Spatz, Ernest J. W., textile chemist and dyer, United Piece Dye Works. Box 164, Lodi, N. J.

Ulmes, August, textile chemist, Calco Chemical Company, Bound Brook, N. J. 9 Haynes Street, Somerville, N. J.

Wiehl, Arthur F., salesman and demonstrator, Geigy Company, Inc., New York City. 23 Woodland Avenue, Glen Ridge, N. J.

Junior Members

Blair, James A., student, Philadelphia Textile School, Philadelphia, Pa.

Morrill, Elliot, assistant chemist, Dyes Distributing Corporation. 1527 Kenilworth Avenue, Chicago, Ill.

Schwartz, Simon B., assistant superintendent, Maginnis Cotton Mills, New Orleans, La.

Archie K. Innes, of the M. T. Stevens & Sons Company, and Alden D. Nute, of the American Printing Company, Fall River, Mass., were transferred from Junior to Active Membership.

The Treasurer of the Association reported that quite a number of the members were delinquent in regard to the payment of dues, and it was the opinion of the Council that a special letter should be sent to such members in an effort to obtain a settlement, before their names are removed from the list of members in accordance with the Constitution.

The matter of obtaining funds for the forwarding of the research work of the Association was gone into at quite some length, and it was the opinion that such funds could be obtained by increasing the number of Corporation Members, and steps are soon to be taken with this object in view.

It was felt that many of the Active Members would be willing to subscribe to the Research Fund, and circulars covering this phase of the work will shortly be issued.

Considerable discussion was carried on relative to the data which will appear in the 1925 Year Book.

Messrs. Hirst, Moran and Robbins were appointed a committee to look over a paper which had been offered in response to the list of prizes appearing in the Year Book.

Respectfully submitted,

W. E. HADLEY, Secretary.

Twenty-Sixth Research Committee Meeting

The twenty-sixth meeting of the Research Committee of the American Association of Textile Chemists and Colorists was held at the Engineers' Club, Boston, Mass., on January 9, 1925.

The following members were in attendance: Prof. L. A. Olney, W. D. Livermore, W. K. Robbins, W. C. Durfee, G. A. Moran, A. E. Hirst, W. M. Scott, R. F. Culver, W. R. Moorhouse, J. F. Bannan, W. H. Cady, W. D. Appel, H. W. Leitch, W. E. Hadley.

Plans were considered for correlating the standard methods as published in the 1924 Year Book, and which have been revised since publication, in order that the 1925 Year Book may contain tests satisfying not only the requirements of the manufacturer but also those of the consumer of textile materials.

Regarding the fastness to light, the committee will shortly furnish a statement* concerning the results which have been obtained up to the present time and pointing out the method which is considered the nearest approach to duplicating the fading action of sunlight.

Consideration was given to the desirability of determining the fastness of textile material dyed with the more important dyestuffs and recording these tests in terms of the standard methods already adopted by the Association, in order that, eventually, it will be possible to have a more or less complete tabulation of the fastness of dyestuffs in the Year Book.

It was decided to seek information from the textile manufacturers and consumers as to what other tests should be studied by the Research Committee. The following subjects were mentioned as possibilities requiring

*This appeared under "Communication" on page 53 of the Proceedings in the February 9 issue.—Editor.

research work: Ink Eradicating, Carbonizing, Steaming, Crabbing, Sponging, Hot Pressing, Sea Salt.

Respectfully submitted,

W. E. HADLEY, Secretary.

Correction

The following corrections should be noted in the article, "Zinc Ferrocyanide As a Mordant," by Stewart F. Carter, appearing on page 46 of the Proceedings in the February 9th issue.

The first sentence of the fifth paragraph of the article should read: "In this process the white cloth is printed with colored resists consisting essentially of zinc oxide, thickening, and a suitable *basic color, after which the goods are padded in Prussiate* Aniline Black, which consists of aniline salt, sodium or potassium ferrocyanide, and sodium or potassium chlorate." The italized phrase was omitted.

On page 47 the word "zinc" should be added before "ferrocyanide" in the paragraph beginning: "It was also considered well to make a side trial with potassium ferrocyanide alone. In this case potassium ferrocyanide equivalent to one gram of [zinc] ferrocyanide was added to the same amount of color solution as used in the regular experiments."

Applicants for Membership

Active Membership

Bader, John, chemist, Liberty By-Products Works, Belleville, N. J. Sponsors: E. A. F. Zillessen and E. J. Zillessen.

Campbell, Donald J., bleaching demonstrator, Roessler & Hasslacher Chemical Company, Perth Amboy, N. J. Sponsors: Thomas D. Ainslee and J. J. Sokolinski.

Clendinning, Thomas B., colorist, Newport Chemical Works, Inc., Passaic, N. J. Sponsors: P. H. Stott and E. A. Keeler.

Kramer, Theodore Z., foreman dyer, Oakbrook Hosiery Mills, Reading, Pa. Sponsors: H. E. Tillson and J. H. Hennessey.

Mayer, Frederick W., chemist and superintendent, Anchor Color & Chemical Works, Dighton, Mass. Sponsors: Stanley I. Garnett and Julius G. Romero.

Newman, Samuel, salesman and demonstrator, Kem Products Company, Rahway, N. J. Sponsors: J. F. Branscomb-Doyle and D. P. Knowland.

Potter, Charles D., bleaching demonstrator, Roessler & Hasslacher Chemical Company, Perth Amboy, N. J. Sponsors: Thomas D. Ainslee and J. J. Sokolinski.

Staples, Robt. Taft, dyer, Planters' and Merchants' Mills, Inc., New Braunfels, Texas. Sponsors: J. E. Moore and C. H. Stone.

Junior Membership

Parkman, Francis, dyer, Ciba Company, Inc., New York City, N. Y. Sponsors: W. E. Mitchell and E. D. Lind.

Seery, Francis T., textile chemist, Roessler & Hasslacher Chemical Company, Perth Amboy, N. J. Sponsors: Thomas D. Ainslee and J. J. Sokolinski.

Warshaw, Floyd F., textile colorist, Newport Chemical Works, Inc., Passaic, N. J. Sponsors: C. F. Schaumann and P. H. Stott.

Changes of Address

Chantler, Ambrose R., 1 Cranford Circle, Wilmington, Del.

McGowan, F. R., textile engineer, Transportation Building, Washington, D. C.

Muirhead, Samuel, 538 Haverhill Street, Lawrence, Mass.

Photis, Christos J., 345 Essex Street, Lawrence, Mass.

Walsh, Frederic C., 3707 Chestnut Street, Philadelphia, Pa.

Reed, Francis, 61 Chestnut Street, New Bedford, Mass.

Smith, Thomas, Jr., 128 West Merrimack Street, Manchester, N. H.

Unterweiser, Joseph S., care of Newport Chemical Works, Doyle Building, Philadelphia, Pa.

Withdrawn

Dearing, M. C., Redlands, Calif.

Lundquist, A., 1870 Madison Street, Brooklyn, N. Y.

Shackelton, Henry J., Chester Pa.

Stone, Charles, 25 Mattapan Square, Mattapan, Mass.

ASSOCIATION BADGES

The lapel button badge illustrated herewith is worn by members of the American Association of Textile Chemists and Colorists.

The three "rings" are enameled in red, yellow and blue, respectively, and the initials and border are brought out in gold. The general effect is exceedingly attractive.

Badges may be secured at $1.50 each by addressing the Secretary.

WALTER E. HADLEY,
5 Mountain Avenue,
Maplewood, N. J.

AMERICAN
DYESTUFF REPORTER

Devoted to the use and application of dyestuffs and the mechanical equipment incidental thereto.

LOUIS A. OLNEY
PROFESSOR OF CHEMISTRY AND DYEING, LOWELL TEXTILE SCHOOL
Directing Editor

CLAYTON HOAGLAND
Managing Editor

Published biweekly by
HOWES PUBLISHING CO., INC.
90 William Street, New York City

A. P. HOWES, *President* E. S. PREDMORE, *Secretary*

Subscription price $5.00 per year; Canadian $5.50; foreign $6.00

Vol. XIV February 23, 1925 No. 3

FIRE OR SMOKE?

DURING recent weeks there has been a great deal of conversation in ordinarily well-informed circles, and considerable newspaper publicity relative to the reorganization of the German dyestuff trust—the famous "I. G."—and with regard to further efforts on the part of the Germans to invade the American market.

One letter received recently from a German correspondent by the head of an American chemical manufacturing concern states quite specifically that he knows it to be a fact that definite plans are under way whereby the I. G. will merge its constituent companies into one manufacturing unit with a single sales organization and that certain plants will make intermediates, others pharmaceuticals, others dyestuffs, etc., thereby greatly adding to the efficiency and effecting lower costs. It is also a fact that upon the recent reorganization of the I. G. capitalization on a gold mark basis, considerably greater financial resources than had been anticipated were disclosed. There are also numerous more or less indefinite reports to the effect that agents of the I. G. are busy in this country at the present time with matters relating to the purchase of various American dyestuff manufacturing plants.

A New York daily newspaper recently featured a series of special articles dealing with the reported activities of unidentified German interests who proposed, it was stated, to form an American company or companies and sell the securities thereof to American investors for the purpose of acquiring domestic dyestuff manufacturing plants with the idea of using the American supplied capital to further demoralize the domestic market and thus eliminate American competitors.

It is probable that many of these rumors are without any considerable foundation in fact. However, where there is so much smoke there must be a certain amount of fire. It is quite obvious that the German dyestuff trust would welcome an opportunity to gain control of the American market, but whether or not aspirations of this kind can be carried to an accomplished fact will remain for future years to determine.

One thing seems fairly obvious to us. If the Germans or any other new factors anticipate making a serious bid for dominance of the American dyestuff market they must be prepared to face ruinous competition and to operate at a loss for a very considerable period. Great as may be the financial resources of the I. G. it is questionable in the extreme whether they equal or even approximate the resources of the leading American manufacturers. Granted, moreover, that they may have a certain edge in technical skill over our domestic concerns, the gap in this respect is by no means so wide as it was a few years ago. Any foreign controlled concern operating in this market would have to face the same conditions as those which govern manufacture in the plants of our American concerns—they would have to pay American prices for labor, raw materials and other manufacturing items. The only advantage which they could claim would be that which is inherent in their greater experience and reputed superior technical ability. It is the opinion of The REPORTER that this single factor would not outweigh American ingenuity, energy and admitted mechanical superiority.

There is, however, one phase of the situation which is an unquestioned menace. This is, that it might be possible for an American manufacturing concern, which was in reality under German control, to finance itself entirely in America through the sale of bonds and stocks, thus jeopardizing not a single penny of Germany money, and, by the ruthless waste of this capital, so depress prices and demoralize the market as to make it impossible for anyone to operate on a profitable basis. Such a plan, if it could be effectively carried out, would mean the destruction of the business of American plants already in existence through the employment and consequent destruction of American capital secured under false pretense. The success of such a plan would depend entirely upon the size and gullibility of the "sucker list" of American investors.

We do not for a moment believe that the I. G. is foolhardy enough to risk its own money in an endeavor to destroy American concerns who are as well or better financed than they themselves. On the other hand, they would no doubt be very glad of an opportunity to utilize the funds of American investors to accomplish their purpose.

This phase of the situation should be given the widest publicity, and all American investors should be thoroughly warned against offers of participation in the profits of any new dyestuff manufacturing enterprise, no matter how alluring it might appear on paper.

MORE ANENT FASTNESS GUARANTEES

CONSIDERABLE comment, both verbal and written, regarding the editorial "Guaranteeing Fast Dyes" which appeared in the January 26th issue of The Reporter, has come to the publisher's attention. With very few exceptions, those with whom we have talked or from whom we have heard indorse the stand taken in this editorial, namely, that no responsibility for the guaranteeing of fastness to dyed fabrics can be assigned to the dyestuff manufacturer, but must be shouldered entirely by those who have charge of the dyeing operations.

An executive of one of the larger American dyestuff manufacturing companies, who wishes that his identity be withheld, in the course of a letter written to us on this subject says:

> The dyestuffs manufacturers, particularly the larger ones, are investigating in the laboratory as thoroughly as is possible, the properties of the dyestuffs which they market, particularly in connection with their fastness, suitability for machine dyeings, or for certain particular types of goods, etc. The meat of this information is conveyed to the consuming trade in the form of circulars and considerably more detailed information is given to the salesmen and the technical demonstrators. All this information must necessarily be given on the basis of laboratory or large scale tests, as the case may be, but obviously it does not carry any guarantee as to the results obtained, excepting that the dyestuffs when delivered by the dyestuff manufacturer, will agree in every respect with the standard samples which have been submitted to the trade at the request of the consumer; in other words, what the dyestuff concerns have been doing is to determine as carefully and accurately as possible the properties of each particular dyestuff and to give this information to the mills.
>
> If the finished materials after dyeing are satisfactory or unsatisfactory to the consuming trade is a matter which must be decided exclusively by the manufacturer of the material. If the dyestuff should not be applied correctly, or in the right combinations, this cannot be controlled by the manufacturer of dyes. The responsibility of the manufacturer of dyes ceases when he supplies to the consuming trade products which are equal in every way to the samples submitted.
>
> I do not know whether I am making my views entirely clear to you, but it seems to me that there is a very clearly defined line for responsibility.
>
> You state in your article that certain small dye users are not in a position to carry on satisfactory tests to determine the properties of the dyes. While this may be true in some cases, it is extremely unfortunate because the dyestuff manufacturer cannot under these conditions take responsibility for the results obtained.

A very similar view is taken by William K. Robbins, who is, perhaps, the dean of the textile processing profession in America, having been for a great many years chief chemist and superintendent of dyeing of the Amoskeag Manufacturing Company. In the course of a letter prompted by our editorial on the subject Mr. Robbins says:

> I indorse your position that there are too many factors in application of dyes and treatment of colors that are beyond the control of the dye maker or dealer to give either any responsibility for the final result in the fabric.
>
> The manufacturer need have no fear of claims for unsatisfactory colors when his dyeing department has been informed beforehand that the colors are to be guaranteed, for there will be no claims; and any guarantee which is given without such knowledge by the dyeing department, should be made good by the party giving it, whether manufacturer, jobber or retailer.
>
> There are such different kinds and degrees of fastness that guarantees should be made with great care.
>
> One instance will illustrate: Worsted dress goods colored with the best acid dyes and amply fast for that class of merchandise, was used to trim a white cotton wash-garment; after an alkaline soap wash the stained garment was sent to the mill with complaint for bleeding of the color which, of course, was never intended for such treatment. Reasonable inquiry would readily have brought out this fact and all the trouble would have been avoided.
>
> This is typical of many happenings with colors on various fabrics, which have given rise to complaints and claims and which lend themselves to the propaganda against American goods and American-made dyes, which ample experience has proved to be fully as good and in some instances even better, type for type, than the imported dyes.

Aside from its clearly stated position on the question of fastness guarantees as being representative of the viewpoint of one of America's largest textile manufacturers, the last paragraph of Mr. Robbin's comment should be particularly gratifying to domestic dyestuff manufacturers. It is not so many years ago that the admission that American dyes were, type for type, equal to the foreign would have been extremely difficult to obtain from any American textile manufacturer.

A. E. Hirst, chief chemist and assistant superintendent of the American Printing Company, further endorses the position taken in our editorial. A portion of his letter follows:

The tests for fastness, with no exceptions of importance beyond that of fastness to light, can be readily made by the dyer as well as by the color manufacturer. The dyer knows, or should know, the requirements of the ultimate consumer in this respect, and by subjecting his goods to such treatment, he can feel confident that he can use his own judgment in selecting colors and their method of application. The proposed methods of fastness tests of the American Association of Textile Chemists and Colorists should be of much value for this purpose.

Your point concerning fastness to light presents a real difficulty. In the great majority of cases the dyer should know the general fastness properties of the usual classes of colors, but, of course, there are individuals in such classes which may be abnormal. I think that almost invariably colors manufactured by dependable concerns are described in their literature in detail, and that their statements as to fastness to light can be depended upon as authoritative.

As you state, the method of application may affect the fastness of a dyestuff, and so the manufacturer cannot guarantee its success without specifying methods, consequently he should not be held responsible for troubles arising from variation in processes. To a man with the proper knowledge of dyes, it should be possible to judge if the peculiarities of his process would affect the light fastness by considering the points of difference between his method and the standard used by the color manufacturer.

For these reasons I believe that the producer of colored goods need not have recourse to the dye manufacturer in case of claim made by the customer for unsatisfactory goods.

From all of the above, we feel that our original position is sound, and that any dyestuff manufacturer who is asked to share the burden of claims made for lack of fastness in goods dyed with his colors, may, with entire fairness, deny any responsibility whatsoever.

TEXTILE CHEMISTRY COURSE AT COLUMBIA UNIVERSITY

A course in textile chemistry, with Benjamin B. Underhill as instructor, is being given in University Extension at Columbia on Tuesday evenings during the Spring term. The work will embrace the chemical analysis and dyeing of various textile fibers and will include both laboratory work and lectures.

The outline includes chemical analysis of textile fibers, their scouring, bleaching and quantitative analysis; conditioning and carbonizing of wool, mercerizing, theory and methods of dyeing and testing the fastness of colors.

RECENT LITERATURE

The Wet Processes of the Wool Industries. By John Schofield, Fellow of the Physical Society and Textile Consultant, Huddersfield, England. 428 pages. 100 illustrations. Netherwood Dalton & Co., London, England. Howes Publishing Company, New York, American agents. Price, $5.00.

While this volume is based upon the author's previous work on the subject, entitled "The Practice of Scouring and Milling," it has been so revised and enlarged as to contain nearly three times as much text material. The book is unique as far as the literature upon the subject of the wet finishing of woolens and worsteds is concerned in that it combines with the practical consideration of the subject a very full discussion of the theory and physics of the various steps of the different processes. Whole chapters are devoted to the theoretical principles and physics of washing, and detergent action, and a section of forty pages with many tables and graphs is devoted to a scientific discussion of the relations which exist between wool and moisture.

While the physical principles involved are so fully discussed, the chemistry of the subject is not neglected. Under the heading, "Theory of Chemical Action in Solutions," the author gives in four pages a very concise statement and discussion of the more recently applied Ionization Theory as used in connection with certain textile questions such as

1. Acidity or alkalinity of water supplies.
2. Residual acid or alkali in textile fibers, e. g., sulphuric acid in wool; scouring residual in wool.
3. Use of caustic as against carbonated alkali or ammonia.
4. Ammonia or silicate of soda additions to a peroxide bleaching bath, etc.

Taking the subject of scouring and wet finishing as a whole, its various phases are discussed with considerable detail both from the theoretical and practical viewpoints, and in an interesting and quite different manner from any other book yet published upon the same subject. It is well worth the perusal of anyone interested in the scouring and wet finishing of wool and its products. L. A. O.

The Noil Chemical & Color Works are circularizing the trade with an announcement of Noil Direct Navy R, recommended for unions and described as very fast to acids, alkalies, perspiration and hot pressing. It leaves Celanese white, gives solid effects on cotton-wool unions.

Practical Hints on the Production of Bright Colors on Textile Fabrics

Part X

Plant for Treating Several Beams Simultaneously—Its Operation—Bleaching Operations—Dyeing Process—Advantages of the Plant

By RAFFAELE SANSONE

A PLANT for treating several vertically placed beams simultaneously has not yet to the writer's knowledge been introduced in any works or essayed for the dyeing of bright colors on cotton cloth, although it would offer several advantages. A plant could be constructed on the principle shown in Fig. 1.

This diagram shows a strong high cylinder (G), made to resist the action of the dye baths, preferably of an iron silicon alloy. It is held on a solid iron frame at a small height from the floor, or sunk below the pavement in a cement pit, so that the dyers can have easy access during the boiling, bleaching, dyeing, rinsing and soaping operations.

The upper portion of vat G contains a heavy cover (R), fixed at one end by hinges, and opened and closed by the assistance of a chain working on wheels, or by any other convenient arrangement. This cover contains a small square opening having parallel bars forming a sort of grid or grate, through which a long rod can be lowered to a certain depth when the cover is lowered on cylinder G, having at the bottom a hook on which are hung two or more samples of the cotton cloth being boiled out, dyed, rinsed or soaped, and at the top a short handle. This rod serves in testing the dyeing operation going on in vat G. The above opening is closed hermetically with a small cover, even when the rod has been entered.

The interior of vat G contains on the bottom six resting blocks (J, J, J,) having conical openings leading to tube N and to the upper portion of a powerful suction and pressure pump (P), which is also connected with the bottom of vat G through tube T. On such blocks are entered the lower cone tubes of six large beams of cloth, of which only three are visible in diagram, indicated by A, B, C. Such cone tubes, on entering in blocks J, J, J, form a watertight connection.

The six beams of cloth have fitted at the top the corresponding number of strong rings, in which the hooks of an iron frame (F) can be entered when it is necessary to raise them out of vat G. Frame F is fitted to four iron chains (L), ending in the support of a small wheel (Jo), raised or lowered by moving chain H on arrangement K, which runs on the upper rail O.

Besides the above improvements the plant is supplied with a pressure gauge, a cover supporter (S), two large thick glass windows for observing the interior of vat G, to note how the treatment of the material is proceeding, a steam heating arrangement occupying the space left around the supporting blocks J, J, J, a large tap for entering running water in several places simultaneously, a series of boilers for the preparation of the different boiling out, bleaching, dyeing and soaping baths, with tubes and taps leading to the interior of vat G, a tap and tube for leading in hot air under pressure for the drying operations, a tap for introducing steam, if necessary, through the body of the beams, etc.

Operation of the Plant

The working of the above plant, owing to the weight of material treated, is a responsible operation and can be entrusted only to first-class dyers. A way of treating the cotton goods from the gray to the fully dyed and dried condition would be as follows. Many improvements on this method are possible.

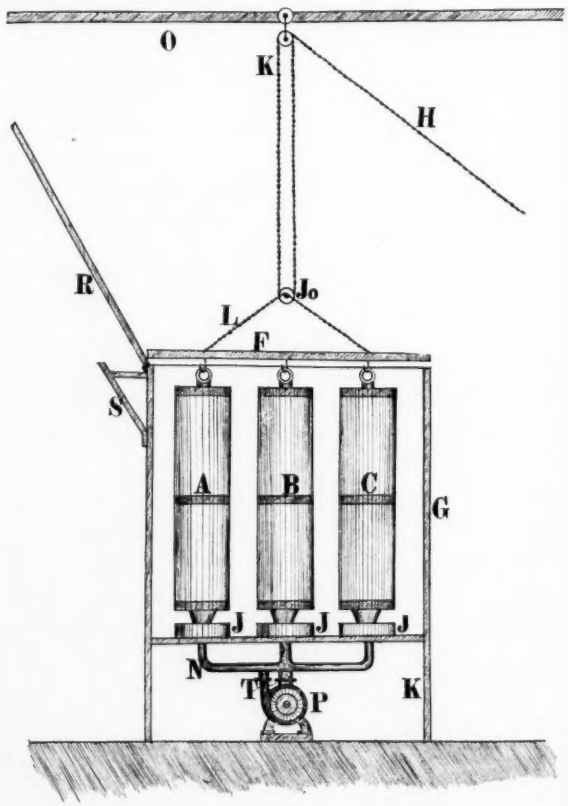


FIG. 1

The dyers first fix the flanges on the centers or cores of the beams, in accordance with the widths of the fabrics that are to be placed on their lower and upper parts, and then enter the beams in the machine for rolling an evenly and with sufficient elasticity the cotton fabrics themselves. When in this way the six beams have been filled with the twelve lots of cotton cloth, they attach them by their rings to frame F, lifting this through the hand crane toward the upper rail, and allowing it to run of its own accord to the plant of treatment, where the six beams are lowered simultaneously in the empty vat G, the cover of which has been opened through the chain already indicated, and allowed to fall on support S.

While the beams are being lowered two operators at the windows give instructions if the beams are to be moved in any particular direction, thus greatly simplifying the work of the man at the crane, and preventing loss of time. The cone tubes of the six beams thus fix themselves into the openings in blocks J, J, J, and cover R can be raised and lowered above them, being fixed to the upper rim of vat G. At this point the rod is introduced through the opening on the top of the cover, with four or five samples of the gray cloth being treated placed on its lower hook, closing after this the small door already referred to, and opening on steam through the body of the beams of cloth. This somewhat loosens the size in the cloth, and after a time the condensed water formed can be withdrawn.

After the withdrawal of the condensed water the dyers, still allowing the steam to pass through the cloth, enter a weak bath of caustic soda, carbonate of soda or silicate of soda, prepared in one of the boilers, taking care to expel all air present in vat G by opening a small valve in its upper part.

At this point the centrifugal pump (P) is put in motion, first to pump the dye bath rapidly through tube T, driving this through the core of the beams and material just above again in the bath of treatment, and later to pump the bath through the cloth and cores of the beams, and sending it upward through the bottom of vat G. Such double actions are then continued for a certain number of hours, after which the small door on cover R is opened, and the iron rod is rapidly withdrawn. The dyers remove from its hook one of the samples of cotton cloth, and replace it again in the grid in vat G, closing again just above the small door, and continuing the boiling. In the meanwhile, the chemist examines the sample in the laboratory to observe how the purging operation has been conducted, and also tests a sample of the lye circulating through the machine, and gives his instructions if the boiling is to be continued, if it is to be conducted with the same, or with fresh alkaline lye, or if it is to be stopped.

The hot alkaline bath thus passes continuously through the two lots of cloth on each beam, extracting rapidly from the cloth the sizing and filling matter that may be present, and bringing this around in the bath. A strong pressure is produced, in the meanwhile, in vat G, which the dyers note on the pressure gauge. The degree or energy of the circulation and boiling are controlled by observing the bath moving before the windows, above which it may be necessary to place an electric light reflecting inside.

The Bleaching Operations

When the boiling out is completed the weak alkaline lyes are withdrawn and cold water is allowed to run through the material for some time to aid the further expulsion of the impurities and lye.

After a thorough rinsing, a weak bath of hypochlorite of soda is introduced from another of the preparation boilers, already indicated. While keeping cover R closed, the action of the circulation pump P is now aided by introducing a certain quality of air under pressure, to quicken the bleaching action and act as a chemical liberator of the hypochlorous acid, through the carbonic acid contained, and a mechanical assister by pushing the penetration to the innermost cells of the cotton fabrics.

After a certain time of treatment, a second sample is withdrawn from the rod hanging from cover R to note the degree of white produced, together with a small quantity of the treating bath, closing the small door after the first operation. The chemist advises if the desired white has been obtained, so that the dye bath may be run off, or if, contrarily, the dyeing is to be continued with the same bath, or with a fresh bath of the same or reduced strength.

When the desired white has been produced and the bath of hypochlorite run off, the dyers follow with a second very thorough rinsing, adding to the last rinsing water a certain quantity of an antichlor (bisulphite of soda, weak sulpuhric acid, weak hydrochloric acid, etc.), or conduct the passage of live steam for some time, which reacts on the traces of hypochlorite still present, transforming these into chlorate of soda. Should an antichlor be employed a third rinsing must be made to eliminate all traces of this last product which would interfere with the dyeing operations that follow.

The dyeing is conducted with a bath prepared in a third boiler at the back of the plant. The bath circulates through the material in the usual way through pressure and pumping, the cloth thus receiving its color uniformly.

After further dyeing a third sample is withdrawn from the hanging rod and rinsed and dried and compared with the pattern to be matched. If by using the coloring matter alone in water, or in a soap, or soap and phosphate of soda bath, the desired intensity of shade has not been obtained, the chemist or colorist recommends the addition of a certain quantity of salt to be introduced in several lots in the form of a solution at regulated intervals. In this way the desired shade is produced and the last rinsing operations can be performed. These are continued as long as is required to expel the coloring matter mechanically fixed, and the reversed action of the pump is repeated. During the dyeing operations warm, com-

pressed air is used to assist the dyeing as much as possible to assure complete penetration.

The rinsing completed, the dyers have only to stop the flow of rinsing water and run off all of this still in the apparatus. The hot air under pressure is then turned on to expel the water present in the goods, and to dry the material to the degree required for the finishing operations to follow.

The Advantages of the Plant

The advantages of the above plant are several; some of them can be indicated as follows:

1. The amount of cotton cloth treated is large, and the space occupied small.

2. The operations of boiling out, bleaching, dyeing and soaping can be conducted on the plant without requiring any intermediate manipulation of the material.

3. As the dyeing is rapid the process gives little trouble to experienced operators.

4. The circulation of the different treating fluids is rapid, and their action is increased as much as possible through simultaneous mechanical and chemical means.

5. All portions of the treatment proceed under a pressure that can be brought up to a certain number of pounds per square inch.

6. The penetration of the different baths is very thorough, and quite constant, if the treating agents are properly prepared and used.

7. The operators can observe the interior of vat G at all times through the windows and keep careful check on the process.

8. The special choice of the portions of the plant in contact with the treating fluids allows its use for treating cotton cloth with any ordinary chemical, and the bleaching can be conducted with hypochlorite of soda, chlorine water, the perborates, hydrogen peroxide, or other means that may be found convenient.

9. The volume and strength of the bath required for each treatment can be regulated to the weight of the goods to be entered, and most baths can be reinforced and utilized again.

10. The boiling out process can be conducted at the highest possible temperature and under as strong a pressure as vat G will stand, using only caustic soda, caustic soda and carbonate of soda, carbonate of soda alone, silicate of soda, or malt baths, with or without a following alkaline boiling, etc.

(To be continued)

Dyestuff Tables

A List of the Principal American-Made Colors with Their Properties and Fastness Characteristics

[Note: The publishers of The Reporter have secured more or less complete data in regard to many of the dyestuffs which are at the present time being manufactured in the United States. As the following material has been brought together from various sources, they realize that errors are quite likely to appear, and it is earnestly requested that any readers who find errors or who are able to give additional information will communicate with the publishers in order that this material may be made as correct, complete and up to date as possible. These tables will appear serially until all colors upon which we have data shall have been covered. The publication of this data was begun in the issue of March 10, 1924.]

DIAMINE BLACK RO

(Schultz No. 328)

COMPOSITION: Disazo.

SPECIALLY SUITABLE FOR: Cotton.

USUAL METHOD OF DYEING: With common salt and soda ash, and also diazotized and developed.

SHADE: Dull black.

SOLUBILITY: Good.

LEVEL: Dyes level.

EXHAUSTS: Well.

FASTNESS TO (Dyed Direct):
- **Acid:** Redder.
- **Alkali:** Fast.
- **Chlorine:** Fugitive.
- **Cross-Dyeing:** Poor.
- **Ironing:** Fairly good.
- **Light:** Not fast.
- **Rubbing:** Fast.
- **Sulphur:** Fast.
- **Washing:** Fairly fast.

FASTNESS TO (Developed with Beta-Naphthol):
- **Acid:** Fast.
- **Alkali:** Fast.
- **Chlorine:** Fugitive.
- **Cross-Dyeing:** Fairly good.
- **Ironing:** Fairly good.
- **Light:** Developed and coppered, better.
- **Rubbing:** Fast.
- **Sulphur:** Fast.
- **Washing:** Fast.

OTHER PROPERTIES: Developed with beta-naphthol, the shade is deeper and not as red.

DYED BY OTHER METHODS: Developed and coppered, the color is faster to light; developed and chromed, no better; developed with phenol, gives a navy blue fast to cross-dyeing.

ON UNIONS: Cotton-wool unions: Both fibers nearly equal; the wool is very dull.

COMPETING PRODUCTS: Made in the United States by American Aniline Products, Inc.; Noil Chemical & Color Works.

OXAMINE BLACK BHN

(Schultz No. 333)

COMPOSITION: Disazo.

SPECIALLY SUITABLE FOR: Cotton.

USUAL METHOD OF DYEING: Direct with salt, and also developed with beta-naphthol.

SHADE: Direct, a greenish blue; developed, a blue black.

SHADE BY GASLIGHT: Redder.

SOLUBILITY: Excellent.

LEVEL: Good in blacks only.

FASTNESS TO (Dyed Direct):
Acid: Sensitive.
Alkali: Fast.
Chlorine: Destroyed.
Cross-Dyeing: Not suitable.
Light: Fugitive.
Light: Fugitive.
Rubbing: Fast.
Sulphur: Fast.
Washing: Scours off.
Water: Bleeds.

FASTNESS TO (Developed with Beta-Naphthol):
Acid: Fast.
Alkali: Fast.
Chlorine: Destroyed.
Cross-Dyeing: Not suitable.
Ironing: Fast.
Light: Fairly fast.
Rubbing: Fast.
Sulphur: Fast.
Washing: Faster than direct.
Water: Bleeds slightly.

OTHER PROPERTIES: Used in the manufacture of aniline speck-dyes. On unions, fast to steaming.

ON UNIONS: Cotton-silk unions: Silk very light, especially dyed cold. Cotton-wool unions: The wool is lighter than the cotton. Dyed cold, the wool is left white.

DISCHARGING: Discharges white with sulphoxalates.

REMARKS: Developed with beta-naphthol, a very dark navy blue; developed with meta-phenylenediamine, a jet black; developed with phenol, a navy blue; developed with 2 per cent soda at 100 deg. Fahr., lighter in shade.

COMPETING PRODUCTS: Made in the United States by Amalgamated Dyestuff & Chemical Works (Selling Agents, John Campbell & Co.); American Aniline Products, Inc.; Butterworth-Judson Corporation; Central Dyestuff & Chemical Company; Cincinnati Chemical Works; E. I. du Pont de Nemours & Co.; National Aniline & Chemical Company; Newport Chemical Works; Noil Chemical & Color Works; Peerless Color Company; Commonwealth Color & Chemical Company; Calco Chemical Company.

PALATINE CHROME BLACK

(Schultz No. 288)

COMPOSITION: Disazo.

SPECIALLY SUITABLE FOR: Wool—loose wool slubbing and pieces.

USUAL METHOD OF DYEING: Top chrome.

SHADE: Considerably bluer than Diamond Black F and PV; very bloomy.

SHADE BY GASLIGHT: No change in shade.

SOLUBILITY: Better than Diamond Black F.

LEVEL: Dyes level.

EXHAUSTS: Well.

PENETRATION: Inferior to PV; equal to F.

FASTNESS TO:
Acid: Fast.
Alkali: Fast.
Carbonizing: Stands carbonizing.
Cross-Dyeing: The fastness to cross-dyeing is not as good as PV. When boiled with dilute sulphuric acid, it bleeds badly onto white wool.
Fulling: Very good; almost equal to Diamond Black PV. Against white cotton, about the same as Diamond Black F. The latter bleeds bluish onto cotton, while this color bleeds reddish.
Light: Excellent.
Potting: Inferior to Diamond Black PV; better than Diamond Black F.
Rubbing: Crocks slightly reddish.
Steaming: Fast; equals PV; better than Diamond Black F.
Washing: Inferior to PV; equals Diamond Black F.
Finishing: Considerably better than Diamond Black F, and almost equal to PV.

SENSITIVE TO METALS, LIME: Somewhat sensitive to metals.

MACHINE DYEING: Suitable.

DYED BY OTHER METHODS: Can be dyed chromate.

ON UNIONS: Silk-white-effect threads are stained. White-cotton-effect threads are stained.

ON OTHER MATERIALS: No interest.

PRINTING: Suitable for printing on slubbing with addition of chlorate of soda, bichromate of potash, vegetaline and acetate of ammonia. The printed shade is inferior in fastness to washing and fulling to Alizarine Black B (S-862).

COMPETING PRODUCTS: Made in the United States by New England Aniline Works (Selling Agents, U. S. Color & Chemical Company).

BENZO CYANINE R

(Schultz No. 336)

COMPOSITION: Disazo.

SPECIALLY SUITABLE FOR: Cotton and cotton and wool unions.

USUAL METHOD OF DYEING: With common salt and soda ash.

(Continued on page 132)

INQUIRY DEPARTMENT

All classes of chemical work or advice relating to artificial colors, natural dyestuffs, dyewoods, raw materials, extracts, intermediates, crudes, or dyeing chemicals and accessories in general, will be carried out for readers and subscribers of the AMERICAN DYESTUFF REPORTER by this department.

Inquiries of a minor character will be answered on this page, while major matters involving personal investigation, analyses, perfected processes and working formulas, will, if desired, be treated confidentially through the mails. In answering inquiries which, by their nature, require reference to the products, processes or apparatus of some particular manufacturer we aim to be absolutely impartial. We refer the inquiries to specialists whom we believe to be best qualified to answer them intelligently, and must disclaim responsibility if their reports show unintentional bias. All questions, materials for analysis or letters leading to the opening of negotiations for special work will receive prompt attention if addressed to Inquiry Department, American Dyestuff Reporter, 90 William Street, New York City.

J. D. S.—Question: Under separate cover I am mailing you a piece of sheepskin fleece which is dyed for mackinaw collars. Could you give me the method to be used for the dyeing and finishing of this material? The skins arrive all scoured and have been tanned with quebracho and gambier. The sample is quite fast to washing and scouring in soap. I matched the sample with Bismarck Brown R and Nigrosine, also with Bismarck Brown R and Methylene Blue 4R, but the dyeings lacked fastness to water and soap. I intend after-treating with tannin and tartar emetic, which should improve the fastness but which, I am afraid, will also render the cost prohibitive for the purpose of the material. Possibly the requirements are a bichromate mordant at a temperature not higher than 45 deg. Cent. and a chrome color. Any advice you may be able to give me will be very thankfully received.

Answer: A careful reading of your letter and an examination of the sample enclosed leads us to believe that the best process for you to follow in dyeing this material is to use neutral dyeing fast acid colors at about 45 deg. Cent., with the addition of Glauber salt and a small quantity of acetic acid. We believe that this will give you satisfactory fastness to water and washing, and will be considerably less expensive than dyeing with chrome colors and a mordant.

After dyeing, the material should be rinsed in a moderately warm bath containing a small quantity of Monopole or Turkey Red oil, in order to give it a proper finish and softness.

We do not believe that your suggestion of after-treating material which has been dyed with Bismarck Brown and Nigrosine with tannin and tartar emetic would materially improve the fastness to these colors when used on wool.

M. C.—Question: We have noticed in some of your recent issues considerable material on mildew and other micro-organisms relative to the destruction of cotton fabrics. Is there any test other than microscopic examination that would indicate a particular kind of micro-organism, or the change due to its activity? If so, will you indicate to the writer the procedure in making such tests?

Answer: In cases where mildew is suspected, as, for example, on half-wool hosiery, certainty as to the actual presence of mildew can only be determined after very careful microscopic examination, and then only under the most favorable conditions as to light and surroundings. A possible though complicated and ill-defined test may ultimately be developed, based upon the secretion of one or more enzymes during the growth of the mildew, and which, in reality, is the destructive agent for the textile upon which the mildew thrives. So far as we know, there is no short-cut such as you have in mind.

S. C. L.—Question: I have a lot of light-grade Bengaline that crinkles, and then has dye-breaks if handled loose; I find it necessary to set them on a roller in boiling water overnight, afterward degumming on a roller with French boil-off machine and dyeing on jigs. I get a heavy moire effect which I cannot take out. Could you please recommend some method to remove this moire? I have asked several boss dyers, some of whom have the same trouble; others have crabbing machines and steamers. I have neither apparatus. Please let me know if I am in a position to handle these goods. I have some qualities of Bengaline that do not crinkle and with which I have no trouble. Could the trouble be in the weave?

Answer: The moire effect which you have been getting on your Bengaline is caused by allowing one piece of this material to press the other while in a damp state. As you know, Bengaline is a ribbed material which consists of a cotton warp woven over with silk; one piece of this material pressing on another while wet will form ridges and cause the goods to crinkle, thereby giving a moire effect. The only way to overcome this is to place a heavy oilcloth between each piece of goods that is placed in the jig or on the roller, thereby preventing this ridged effect. By no means use paper; it retains dampness and is impossible to remove, as it crumbles and gets into the weave. The proper way to dye Bengaline is in a crabbing machine. It is dyed open and dried immediately.

The new worsted dyehouse being constructed by the Southern division of the Amoskeag Manufacturing Company is nearly completed. The cost of this dyehouse with its full equipment will run into thousands of dollars. Its operation will increase the capacity of the worsted dyeing department nearly 50 per cent. This, textile experts say, indicates that Amoskeag has a very encouraging outlook for the coming year in the textile trade.

The Lola Manuacturing Company, Stanley, N. C., will begin immediate construction of a dye plant, to be operated with beam dyeing equipment. The machinery has been designed by R. F. Craig president of the mill, and is especially made to overcome seconds made from uneven colors.

Alum in Beater Coloring of Sized Paper

The Proper Use and Function of Alum in the Coloring of Sized Paper with Basic, Acid and Direct Dyes

By WALTER C. HOLMES

ALTHOUGH the primary function of alum in the paper beater is that of insuring the proper sizing of the sheet, it also exerts a decided influence on the coloring of the stock. In regard to the latter role, some misapprehension is prevalent. It is even held by some beater men, apparently, that alum will "set the dye," irrespective of the coloring matter used, and that the addition of excess alum is a cure-all for coloring troubles in general. In point of fact, the effective coloring of paper in the beater is more completely dependent upon discrimination in the use of alum than upon any other single factor.

Basic Dyes

In any consideration of the beater application of basic dyes it is necessary to differentiate between bleached and unbleached stocks. With bleached materials in unsized dyeings the color retention is satisfactory only in very light dyeings or tintings. With increasing amounts of dye the color losses increase rapidly and a point is soon reached beyond which any further increase in dye is a total waste. Even in carrying out sized dyeings similar difficulty is encountered. Basic dyes are precipitated in a greater or lesser degree by size under beater conditions, and it is probably the common impression that the operation of sizing is of considerable service in improving their retention in the sheet. In reality the gain in color retention is considerable, in general, only if the most advantageous provisions are made in the sizing, whereas adverse provisions may result in decided decreases in the effectiveness of the dyeings.

It should be recognized that the use of any excess of alum over the amount requisite for satisfactory sizing exerts an unfavorable influence on the dye retention, and that the color losses increase with increase in excess alum. It is essential, furthermore, that the addition of the alum should be deferred until after the dye and size have had a thorough run in the beater. Any other order of addition invariably proves harmful. The addition of a portion, or all, of the alum prior to that of the dye has been advocated for the purpose of retarding the dyeing, in order to prevent localized overdyeing of stock and the consequent mottling of the sheet. There is no question but such a course would render mottling impossible, but it would also render effective coloring impossible. Any such practice is entirely unnecessary, since the danger of mottling is negligible with bleached stocks if the ordinary precaution is observed of adding the dye slowly in a cold and moderately dilute solution.

The addition of limited amounts of soda ash to the beater subsequent to that of the basic dye and prior to that of the size and of the alum has been proposed recently by Mann[1] and by Holmes.[2]

With bleached rag and sulphite stocks the employment of soda ash in this manner may prove of decided benefit. A dyeing of a basic dye with soda ash may be concluded advantageously with the addition of a small amount of a suitable acid dye.

With unbleached stocks the retention of basic dyes is usually satisfactory, except in the dyeing of very heavy shades. Unbleached materials contain acid constituents which exert so considerable a mordanting effect with basic dyes that the influence of other factors is relatively small. The use of soda ash, however, may result in a limited improvement in the dyeing of ground wood.

Acid Dyes

The use of acid dyes in the beater coloring of paper materials in general is greatly restricted by their relatively poor retention by the stock and the heavily colored backwaters resulting from their employment. With many acid dyes of desirable general characteristics the color losses are so considerable that they are seldom if ever used in the beater, while the dye retention is seldom satisfactory with those dyes which may be, and are, so employed.

For acid dyes in general, alum is a direct precipitant (although a decidedly ineffective one at beater dilutions) and it might, perhaps, appear logical to expect that the addition of excess alum in sizing would result in improvement in dye retention. In reality, however, the excess of alum over size which is most favorable to coloring is very limited with most paper materials. In all instances a point is soon reached beyond which any further addition of alum is detrimental rather than beneficial. It is evident that this may be attributed to the decided acidity of the alum. Although excess acidity is less detrimental with acid dyes than with basic dyes it is, nevertheless, decidedly harmful.

If the acidity of the alum is reduced by partial neutralization, or if aluminum acetate is substituted for alum, a moderate gain in retention is obtained with acid dyes in general together with improvement in shade with certain individual dyes. More considerable increases in dye retention are effected by the employment of so-called "intensifiers." (A typical intensifier

[1] Dyestuffs (1922), 23, 935.

[2] American Dyestuff Reporter, Vol. XIII, No. 14.

of German origin has been found to consist essentially $H_{21}O_{11}A_{10}$of an aluminium-sugar compound of the C_{12} type, together with a little aluminium chloride.) The use of limited amounts of soda ash *in the heater*, as advocated by Mann and by Holmes (see references cited), is inexpensive and is very effective in dyeing medium and heavy shades on rag and sulphite stocks. A final addition of a small amount of a suitable basic dye is often of considerable benefit.

Direct Dyes

Some of the direct dyes which found early application in the paper beater were decidedly susceptible to the ordinary beater acidity, necessitating a partial neutralization of the alum used in the sizing in order to insure desirable shades, but the subsequent development of products of similar color and superior qualities has afforded the paper dyer a very comprehensive range of acid-fast colors. With a judicious selection of the dyes now available the factor of beater acidity may be ignored. The fact remains, however, that much of the coloring of paper with direct dyes, as carried out, is relatively ineffective and that this inefficiency arises from a failure to realize the influence which alum exerts upon the result.[3]

When paper is colored with direct dyes in the ordinary manner (assuming that no salt is employed) there occurs a limited degree of absorbtion of the dye by the stock followed by the precipitation of the residual dye in the liquor in the form of its insoluble aluminium salt upon the addition of the alum required in the sizing. The backwater is usually comparatively free from color, but the dyeing is relatively ineffective, nevertheless, because the greater portion of the dye is retained as the aluminium salt. Such dyeings are usually decidedly inferior in respect to both brightness and strength to dyeings carried out with such provisions as will insure the color retention in the most favorable forms.

The primary requisite in obtaining optimum results is that of promoting the retention of the dye as such. The employment of salt is very effective. Laboratory dyeings of unsized papers in 6-pound shades which give 25 to 30 per cent dye retention without salt give 50 to 60 per cent retention with 40 pounds of salt. The second requisite is that of the precipitation of residual dye in the most advantageous form. The calcium salts of the great majority of direct dyes give decidedly brighter and stronger dyeings than do the aluminium salts and the addition of the minimum amount of calcium chloride requisite for the precipitation may be recommended as a general practice. The sizing of the stock may then be carried out without interference with the coloring.

In the instance of some individual direct dyes it may be of advantage to precipitate the residual color with a salt of some metal other than calcium. With certain dyes it may be desirable to retain the color principally in the form of the copper dye-salt, but in these cases the primary objective is that of improving the fastness of the dyeings to light rather than that of promoting strength and brilliance of color. Whatever the objective in view it is essential to prevent the precipitation of color by alum with practically all direct dyes.

[3] Holmes (1922), J. Ind. Eng. Chem., 14, 958.

NEW NEWPORT BINDER INSERTS

Five new leaflets recently issued by the Newport Chemical Works for their binder describe two acid blues, two golden oranges and a yellow. The blue shades are Newport Fast Acid Blue BGA and Fast Acid Blue RXO; the oranges, Newport Anthrene Golden Orange G and Anthrene Golden Orange RRT, and the yellow, Newport Direct Pure Yellow ML.

Both acid blues are said to be of special interest because of their excellent fastness to light, perspiration, washing and salt water; both are described as having excellent level dyeing properties, as particularly suitable for use in combinations and as excellent colors for natural silk yarns and pieces. Neither of these blues discharge.

Both Newport Anthrene Golden Orange G and Golden Orange RRT are described as very level dyeing and as useful in combination with other vat dyestuffs or the production of tan and brown shades. Both oranges are said to be very fast to chlorine and to possess excellent fastness to boiling soap, light, rubbing, steaming and cross-dyeing. These golden oranges are suitable for dyeing pure silk and Viscose, Chardonnet and Cuprammonium artificial silks, and both are said to be excellent for cotton and silk printing.

Newport Direct Pure Yellow ML finds its chief interest for producing bright yellow shades and in combination with direct blues for very bright green shades. It is described as a good union color for mixtures of either cotton and silk or cotton and wool, the shade being but slightly redder and duller on the animal fiber. While it stains only slightly Celanese and Lustron it is suitable for dyeing Viscose, Chardonnet and Cuprammonium.

THE IDENTIFICATION OF TYPES OF ARTIFICIAL SILK

(*Concluded from page* 107)

bath with the addition of 2 to 4 times the weight of dyestuff of fused sodium sulphide, the stock solution diluted to give 200 c.c. of dye bath for each sample (of ½ gram), then allocated for each and stained under conditions as for Pontamine Scarlet B. Cuprammonium is stained the heavier.

A strong dyeing solution as in ordinary cotton dyeing does not appear to be as satisfactory as this dilute staining bath, as with the heavier per cent of dyes and with salt the two types of silk may tend to even up in depth of shade.

ANNUAL MEETING OF THE TEXTILE COLOR CARD ASSOCIATION

On Wednesday, January 18th, the Textile Color Card Association of the United States held its annual meeting at the Astor Hotel. At the business meeting in the morning the managing director of the association, Margaret Hayden Rorke, presented a very comprehensive report of the work accomplished by the organization during the past year. The report emphasized the co-operation that has been established between the Color Card Association and various allied textile associations, and showed particularly how color standardization has advanced not only in the textile field but in the millinery and shoe trades as well.

John Nash McCullaugh, secretary and industrial manager of the National Association of Hosiery and Underwear Manufacturers, addressed the meeting briefly but with an enthusiasm that clearly indicated his deep interest in the commendable work being undertaken by the Textile Color Card Association. He pointed out how the standard color card had come to assume an authoritative position in the hosiery industry. Mr. McCullaugh attributed the successful and harmonious co-operation of the various industries who work in conjunction with the association to the very able directorship of Mrs. Rorke.

Deserving tribute was given the retiring president, Frederick P. Bode, who has headed the organization since its inception ten years ago. It is announced that Mr. Bode has been made honorary president in recognition of his service.

At the informal luncheon that followed the business meeting Stewart Culin of the Brooklyn Museum addressed the gathered members with a paper, entitled "The Magic of Color," treating in a highly interesting style of the historical aspects of color standardization. More than 100 members attended the luncheon.

The election of officers took place at a second meeting after the luncheon. Edward S. Johnson, of Jas. G. Johnson & Co., was elected president to succeed Mr. Bode. The other four directors were re-elected as follows: William Hand, first vice-president; Albert L. Gifford, second vice-president; Adolf Muller, treasurer, and Carl Forsch, secretary.

DR. BAEKELAND ENCOURAGES A. C. S. FUND

Keeping a pledge "to contribute as many dollars as there are members who give at least one dollar," Dr. Leo Hendrik Baekeland of this city has sent a check for $10,000 to the treasurer of the Endowment Fund of the American Chemical Society.

"As soon as more than 10,000 members have subscribed, I shall add accordingly," said Dr. Baekeland in a letter accompanying his contribution.

"Although I am a little ahead of my 100 per cent stipulation, I feel confident that at least 10,000 members will feel proud enough of the great work of the A. C. S. to increase the nucleus of a fund that should grow as the years roll by and that anybody who has a dollar or more to spare at any time can place it where it will keep doing excellent work, and where money is not wasted on administration expenses.

"Every member should be elevated by the thought that when he adds at least one dollar to the fund, he thus expresses his belief in the great civilizing work the chemists of the United States are carrying on through the agency of the most active chemical society in existence.

The Society, it was explained by officials here, aim to develop as an organization of professional workers through whom the rapidly expanding science of chemistry can be of the highest possible service to civilization through education, industry and other fields.

BILL INTRODUCED FOR RETURN OF GERMAN PROPERTY

A bill proposing the return of all former German property seized during the war by the Alien Property Custodian has been introduced by Senator Borah of Idaho, chairman of the Senate Committee on Foreign Relations. Sections 5 and 6 of Senator Borah's bill cover enemy-owned patents, trade-marks and copyrights, providing for their return to their former owners and would probably include the patents retained by the Chemical Foundation pending decision of the Government's suit to recover them. As this seized German property represents security for payment of American claims against Germany it is known that President Coolidge is opposed to its return on the ground that it would cause disagreement with other nations having claims against Germany.

TAGLIABUE EXTENDS SCOPE OF SERVICE

The C. J. Tagliabue Manuacturing Company, Brooklyn, N. Y., announces that the demand for its engineering service, apart from actual installations of its indicating, recording and controlling instruments, has compelled an expansion of its service and the creation of new functional departments.

Engineering research, that is to say, the study of the requirements for automatic control and other problems in various industries, has of late years assumed a greater and greater importance in the company's activities. Hereafter, these activities will be conducted as a separate department, known as the Engineering Research Department, to be headed by Victor Wichum, M. E., who continues as chief engineer.

The development work on indicating, recording and controlling instruments will continue to be carried on under Frank Bast, whose department is known as the Experimental Department. Development of oil-testing instruments continues with still closer co-operation with the A. S. T. M., A. P. I., N. P. A., and other bodies, R. M. Wilhelm, formerly of the Bureau of Standards, being in charge.

William C. Begeebing now heads the division in charge of automatic controllers, dial indicating and recording thermometers.

DYESTUFF TABLES

(*Continued from page* 127)

SHADE: Navy blue for unions.

SHADE BY GASLIGHT: Redder.

SOLUBILITY: Good.

LEVEL: Dyes level.

EXHAUSTS: Well.

FASTNESS TO:

Acid: Shade is redder with mineral acids; fast to acetic.
Alkali: Fast.
Boiling: Fugitive.
Carbonizing: Not suitable.
Cross-Dyeing: Not suitable.
Ironing: Does not change in shade.
Light: Fugitive dyed direct; faster when after-treated.
Rubbing: Fast.
Scouring: Better than 2B Blue.
Washing: Bleeds off if not after-treated.

DYED BY OTHER METHODS: Dyed on union goods in navy blue shades in a neutral bath and after-treated with chrome and copper and oxalic acid for half an hour at 150-160 deg. Fahr., the color is very fast to even hot soap and will not bleed into white cotton. It is therefore largely used in the making of children's navy blue suits where white cotton braid is used as trimming.

PRINTING: Suitable.

DISCHARGING: Discharges white with hydrosulphite.

COMPETING PRODUCTS: Made in the United States by National Aniline & Chemical Company.

BENZO BLUE 2B

(Schultz No. 337)

COMPOSITION: Disazo.

SPECIALLY SUITABLE FOR: Cotton.

USUAL METHOD OF DYEING: With common salt and soda ash. Must be well rinsed.

SHADE: Dull blue.

SHADE BY GASLIGHT: Redder.

SOLUBILITY: Good.

LEVEL: Dyes level.

EXHAUSTS: Well.

FASTNESS TO:

Acid: Fast to organic acids.
Alkali: Fairly fast to week alkalies.
Chlorine: Destroyed.
Cross-Dyeing: Will not stand cross-dyeing.
Fulling: Not suitable.
Ironing: Fast.
Light: Fugitive.
Potting: Not fast.
Rubbing: Fast.
Scouring: Bleeds off; S-336 better.
Steaming: Fairly fast.
Washing: Bleeds badly; S-336 better.
Water: Bleeds even in cold water.

MACHINE DYEING: Suitable.

OTHER PROPERTIES: Suitable for pad dyeing.

DYED BY OTHER METHODS: Dyes cotton cold with soap.

ON UNIONS: Cotton-wool unions: In a neutral bath the wool is redder and not as heavy as the cotton.

ON OTHER MATERIALS: Silk: Dyed in boiled-off liquor with acetic acid.

DISCHARGING: Discharges white with hydrosulphiate or tin crystals.

COMPETING PRODUCTS: Made in the United States by Amalgamated Dyestuff & Chemical Works (Selling Agents, John Campbell & Co.); American Aniline Products, Inc.; Butterworth-Judson Corporation; Central Dyestuff & Chemical Company; Cincinnati Chemical Works; Consolidated Color & Chemical Company (Selling Agents, H. A. Metz & Co.); E. I. du Pont de Nemours & Co.; National Aniline & Chemical Company; Newport Chemical Works, Inc.; New England Aniline Works (Selling Agents, U. S. Color & Chemical Company); Noil Chemical & Color Works; Palatine Aniline & Chemical Company (Selling Agents, F. E. Atteaux & Co., Inc.).

ABSORPTION OF VAPORS BY COTTON

R. C. Brimley, writing in Nature, records the results of an interesting research. Samples of bleached and unbleached two fold Egyptian cotton hosiery yarn were suspended, at room temperatures, in a bottle, in the bottom of which was a layer of the liquid under consideration. The cotton (which before enclosure had been dried for four hours in a water oven and then weighed) was withdrawn, with suitable precautions, at intervals of several hours and weighed. The results are given in percentages, presumably of the initial weight of the cotton used. Water and glacial acetic acid were absorbed to a much greater extent than were the other liquids used. The unbleached cotton, saturated with their vapors, in both cases weighted from 18 to 20 per cent more than at first. The bleached material absorbed about 1 per cent more water and 1 per cent less acid. Absolute alcohol, carbon disulphide, benzene, ether nitrobenzene and acetone all are absorbed less than half as much as the first two named liquids. The amounts of CS_2, benzene, ether and nitrobenzene, taken up by the bleached and the unbleached fibers, are practically the same, while bleached cotton absorbs much more alcohol and acetone than does the unbleached yarn.—Dyer and Calico Printer.

Technical Notes from Foreign Sources

The Nature of Silk

An interesting article recently appeared in the Chemiker Zeitung which was concerned with some experiments and studies made regarding the properties of silk. The silk was analyzed and it was found that on the average it contained about 38 per cent moisture and about 23 per cent bast fibers, while the mineral ingredients of the textile were well under 1 per cent and seldom if ever rose to as high as half a per cent. The difference between the sum of these figures and 100 per cent represents the percentage of fibroin that is present in the silk fiber. This amounted to about 33 per cent. The investigation also showed that 1 part of nitrogen is equivalent to 5.455 parts of fibroin.

Of course, it is almost impossible to find a pure silk that has been woven into textiles, for it is always customary to load the silk with various filling materials. These increase the weight of the fiber and also make the fiber thicker. The author investigated the various mineral fillers, such as the tin phosphate-silicate, or the tin-alumina-phosphate-silicate which is mostly used in weighting colored silks and also the mixed, organic and inorganic loading method in which iron-catechu-logwood is used almost exclusively for dark silken fabrics. One of the most important matters in which the silk man is vitally interested is the degree of loading that has been given the silk fabric.

There are two methods which may be employed for this purpose. The first is known as the boiling-off method and the second as the nitrogen method. The second method is applicable under all circumstances, while the first method gives reliable results only when pure mineral loading has been carried out on the fiber. This method depends on the treatment of the loaded silk with dilute hydrochloric and hydrofluoric acids. Hydrofluosilicic is also used for this purpose, as is oxalic acid and soda solution. When these methods are employed it is not necessary to subject the silk to a preliminary treatment as when the nitrogen method is used.

Another method of determining the amount of loading material in the silken fiber depends on treatment with an alcoholic solution of hydrochloric acid and final treatment with an alcoholic solution of ammonia, followed by thorough washing.

In treating the silk by the Kejdahl method to determine the nitrogen content of the same, the use of sulphuric acid and perhydrol gives better results than the ordinary reagents used for this purpose. Furthermore, there is a considerable saving in time in this case. After the nitrogen content of the silk is determined, the proportion of weighting materials contained in it may be read off from specially prepared tables. This method gives reliable, accurate results under all conditions.

Dyeing Acetate Silk

Acetate silk is dyed in the presence of protective colloids. This process ensures the correct development of the color on the silk fibers.

For example, one kilogram of the acetate silk which is to be colored black is brought into a color bath which contains the following ingredients: 20 grams of dianisidine salt, 50 grams of magnesium chloride, and 40 grams of sodium bicarbonate. The volume of the color bath is brought up to 25 liters. The treatment of the textile in this bath lasts from half an hour to 45 minutes. The fabric is first washed with soft water, then with hard water and then introduced into a diazotizing liquor which contains 50 grams of sodium nitrite and 200 grams of concentrated hydrochloric acid. The volume of this bath is 20 liters.

The silk is now introduced into the developing bath. This bath is made from 20 grams of naphthylamine-chlorohydrate and 8 grams of sodium bicarbonate, and the silk is allowed to remain in contact with the liquor for a period of one hour. After it has been washed several times, it is then introduced into a second developing bath which contains the same materials in the same proportion as the first. Thereafter the silk is washed first in soft water and then in hard water. As a final step in the process the cellulose acetate silk is passed into a bath which consists of 20 liters of water, 5 liters of a filtered solution of soap, 35 grams of aminonaphthol (gamma acid) and 50 grams of magnesium chloride.

After the artificial silk has been treated in this bath for a period of one hour, a deep dark black color is developed on it. Then the silk is washed once more with water at a temperature of 60 deg. Cent., and then with a warm soap solution and finally subjected to a brightening treatment.

This process is patented in French Patent No 25,785.

Action of Copper Salts on Dyed Fabrics

The protective action of copper salts on dyed fabrics must be explained as due to the reduction of the cupric to the cuprous condition. It follows from this fact that those dyestuffs whose fastness to light, etc., is enhanced by treatment with copper salts, must possess certain radicles in their composition which gives rise to this reduction of the salt. If this theory is correct, then dyestuffs which do not possess this property must be increased in fastness by cuprous salts. And this seems to be the way it takes place.

Diamine Blue 2B and 3B attain a very high degree of fastness when they are treated with a solution of copper sulphate and sulphurous acid. (Akademie Science.)

Fixing Dyes on Cotton

The cotton fiber is first impregnated with sulphurized phenolic derivatives and then printed with dyestuffs that contain acid or basic groups. In discharge printing the fabric is dyed, for example, with the addition of the aforementioned sulphur derivatives or these products are brought in contact with the textile before the dyeing operation or after this operation with or without intermediate drying of the fabric. In resist printing the fabric to be processed is treated with a solution of the sulphur derivative and is then introduced into an Aniline Black bath and then printed with a coloring matter which prevents the development of the aniline black at the printed spots. Then the fabric is steamed and chromed.

This process is patented in German Patent No. 390,931.

Bleaching Woolen and Half Silken Fabrics

The bleaching of woolen and half silken fabric by means of sulphurous acid possesses a number of important disadvantages, the most injurious of which is the action of light and air which results in the negating of the original bleaching action of the sulphur dioxide with the reappearance of the color that was bleached out in the first place. A certain amount of progress has been made in this matter by means of the so-called wet bleaching process which consists in passing the fabrics through a solution of sodium bisulphite which is slightly acidified with mineral acid. The advantage of this process depends on the fact that the sulphurous acid which is set free also has some action on the internal structure of the textile fiber. However, the action of this bleach is not absolutely permanent.

A good bleaching agent for yellow woolen fabrics is the hydrosulphites, salts of $H_2S_2O_4$, particularly sodium hydrosulphite. By the addition of a small amount of Indigo, there is obtained, with the formation of Indigo White, a clear bluish white color.

The most useful of the bleaching agents is hydrogen peroxide, which may be used in the form of sodium peroxide. (In the original article there are given details regarding the compositions of the bleaching baths employed for this purpose and containing as the active bleaching agent, hydrogen peroxide.)

There are also described the most useful bleaching agents for silk, such as sulphur dioxide, sodium bisulphite, potassium permanganate, hydrogen peroxide, sodium peroxide and barium peroxide. Sodium peroxide is recommended for bleaching mixed goods, such as half wool and half silken fabrics, silk mixed with cotton, and the like.

For further details see Textile Record, 1924, number 492.

Fast Tints on Fibers

Fast developed shades are produced on fabrics by reaction between the arylides of 2-3 hydroxynaphthoic acid (the para-toluidines and para-alkoxyanilides excepted) and diazotized compounds of ortho-aminophenol arayl or aralkyl ethers. This process is described in British Patent No. 202,984.

For example, a deep, vivid, red shade fast to light, chlorine, washing and boiling is produced by padding cotton with an alkaline solution containing twenty grams of 2-3 hydroxynaphthoic acid anilide and afterward passing it through a bath containing diazotized 2-amino-4-chlorobenzene 1-1'-diphenyl ether neutralized by the addition of chalk. Benzyl and halogenaryl ethers of ortho-amino phenol yield bluer and yellower shades respectively.

Dyeing Washable Silk Piece Goods

Shades which are fast to washing in lukewarm soap water but not to boiling aqueous soap solutions are produced by treatment of the silk, according to British Patent No. 207,776, in a boiling soap liquor which contains sodium phosphate (about four-tenths of one per cent) for about 20 minutes and then dyeing to shade after the addition of a direct, basic, vat or sulphur dyestuff. Then again, the material may be treated in accordance with British Patent No. 219,697 in a "boiled off" liquor. After this treatment has been completed the goods are dyed by the addition of basic, acid or direct dyestuffs and the dyeing conducted in the liquor until the proper shade is attained. Then the silk is further treated in the same liquor with the addition of approximately two-tenths of one per cent, calculated on the weight of the liquor, of tannic acid, subsequently washing the silk with water and fixing the adsorbed tannic acid by means of tartar emetic. Fabrics which are dyed by means of developed colors are afterward treated as in the first patent.

Preparing Finishing Pastes

A recent article published in the Bulletin Societe Ind. Muhlhouse, 1924, pages 558-561, is concerned with the hydrolysis of starch by means of hydrogen peroxide in the preparation of starch sizing pastes.

Transparent pastes which contain soluble starch and which are suitable for finishing fabrics are prepared by heating aqueous suspensions of starch with small quantities of hydrogen peroxide. For example, 40 kilograms of starch are boiled with a suitable quantity of water containing 60 c.c. of a neutral "5-vol." solution of hydrogen peroxide or its equivalent of sodium peroxide. The product, which may be colored by the addition of dyestuff such as Geranin or Chrysophenine, easily penetrates textile materials, is superior to starch pastes which are prepared by means of malt extracts, and when dried yields a residue which is insoluble in water.

Dyeing Animal Fibers in Hydrosulphite Vat

Animal fibers are not attacked during dyeing with sulphur dyestuffs in the hydrosulphite vat if the operation is performed at a temperature of 60 to 70 deg. Cent., and the quantity of hydrosulphite both before

and during the dyeing operation is regulated so that the bath is always feebly acid. (German Patent No. 395,774.)

Ripening of Viscose

During the process of ripening of viscose, changes in the viscosity of the artificial silk take place consisting of the formation of a jelly structure in the fluid mass. Whereas the viscosity of fresh viscose is constant under all conditions, that of ripened viscose is lower immediately after shaking than after standing for some time. After disturbance, the resistant structure is regenerated more rapidly, the riper the viscose. Similarly the gelatinous structure which forms during ripening presents a considerable resistance against diffusion. The rate of diffusion of 6 per cent of sodium hydroxide solution into a layer of viscose at different stages of ripeness was studied by an optical method, and the delay due to advancing age of the viscose was photographically recorded.

With viscose inside a parchment tube and 6 per cent of sodium hydroxide outside, the migration of the eletroyltes produces, as the viscose becomes older, a lowering of the difference of electrical conductivity between the liquids inside and outside when equilibrium has been attained. This decrease is due to the dehydration of the colloid, which is also reflected in the greater ease of salting out.

Chemical studies of the ripening process showed a slight decrease in the carbon disulphite and corresponding increase in the hydrogen sulphide in the gases evolved by decomposition with acid. On precipitation with alcohol or with salts, the composition of the colloid is extremely variable as regards its content of sulphur and sodium, according to pretreatment of the cellulose (mercerization) and the duration of the sulphiding process. Carbon dioxide has very little influence on the rate of ripening of viscose. (Kolloid Zeitung, 1924, 35, pages 193-198.)

New Textile Fibers

According to French Patent No. 562,053 new textile fibers are obtained from textiles of animal origin by the use of just a slight excess of alkali. Thus, 100 kilograms of carded twill are oxidized with the aid of an acidulated and filtered solution of 100 kilograms of chloride of lime. The action takes place in the cold and lasts for about one-half hour. The fibers are then well washed. The material is then passed into a cold bath containing caustic soda to the extent of 0.1 to 0.15 gram per 100 c.c. of water. Approximately 30 liters of a solution of caustic soda of 0.1 to 0.15 per cent are used per kilogram of fiber. The fibers are then washed twice and dried in heated drums.

The advantage of the process lies in the fact that when the fibers are treated with 1 per cent of caustic soda, for example, the albuminous substances are easily dissolved and washed out, a phenomenon which does not take place in the aforedescribed process, and which occasions a loss of weight in the material.

Absorption of Tannins by Cotton

An interesting study of the degree of absorption of tannins by the cotton fiber has appeared in the Revue des Matieres Colorantes, 1924.

The solution of tannin in water is a colloid. The addition of acetic acid transforms it into a true solution. This acid also exercises a favorable influence on the absorption of the tannins by the cotton fiber. It is said that this absorption is at a maximum when 5 grams of acetic acid are added per liter of the tannin solution. If more than this maximum quantity of acetic acid is added to the solution of tannin, then it was found that the degree of absorption of the tannin mordant by the cotton fiber decreased.

The mineral acids and the mineral salts possess the property of precipitating tannin from its solution. It is, therefore, not astonishing that this substance diminishes the absorption of tannin by the cotton fiber.

Naturally the different commercial tannins and tanning extracts vary greatly according to their origin and their mode of preparation. The impure tannins give colloidal solutions which are more stable than the pure tannins. It is for this reason that the fibers absorb tannins less well when pure tannins are employed than when the impure are used.

On the other hand, the addition of acetic acid or formic acid to the baths will give dyeings which are more beautiful and more full bodied after chroming.

GERMAN DYES AT IMPORTS EXPOSITION

Dyestuffs will be featured in profusion at the German Imports Exposition to be held in Grand Central Palace, June 15-27. It will be managed by Edward D. Selden who was manager of the very successful French Exposition held in the Palace last spring. This is the first time that such an enterprise has been attempted with German goods, and it is designed to afford importers of merchandise from Germany an opportunity to display the various lines collectively in a large exhibition open to the public.

While the full plan and scope of the German Imports Exposition has not been announced to the public as yet, some very interesting features are being arranged, and the Exposition Committee will announce more detailed plans at an early date.

RUSSIAN DYE MARKET

According to some interests, the Russian dye industry is showing steady progress particularly in the manufacture of intermediates. Phenol is manufactured for home consumption, but export is prohibited. It is anticipated that the demand or dyes will increase this year, offering a fine market for American intermediates and dyestuffs.

RECENT PATENTS

Ornamenting and Proofing Fabrics

(1,510,654; October 7, 1924)

Leander J. Cavanaugh, Swampscott, Mass.

It is the object of the present invention to provide a simple and commercially practicable method of ornamenting textile fabrics in lieu of the usual dyeing or printing processes, obtaining at the same time, when that is desired, a soil-proofing effect so that the ornamented fabric may be readily cleansed without injury to the fabric or detriment to the color while at the same time preserving the original softness or pliability of the abric, unimpaired by such treatment.

Generally speaking the invention consists in first impregnating the fabric to be treated with a moistening medium which acts as a filler to partially exclude the finishing material from penetrating into the fibers of the fabric and then applying to the fabric, while still in a damp condition, a liquid carrier or binding medium containing a metallic or bronze powder in suitable proportions to produce the desired effect, according to the principles hereinafter explained.

It should be understood that the present process differs essentially from processes of metallic coating of greased paper or the like to form substitutes for metallic foils since under those processes there is produced a laminated fabric of two or more distinct layers, one of paper and the other of metal, which are capable of separation one from the other. The present process merely ornaments or modifies the color of the original fabric but does not impose upon it a distinct separable layer or coating, and the coloring or proofing matter is intimately and permanently incorporated into the fabric itself.

Suppose, for example, it is desired to secure a certain color effect on a plain or even on a colored piece of cloth under this process.

The cloth is first subjected to a dampening or moistening treatment such as by running the fabric through a liquid bath and squeezing rollers, spraying, steaming or the like in order to impregnate the fibers of the fabric with sufficient moisture to act in the nature of a temporary filler to exclude at least partially the penetration of the finishing material into the interior fibers.

The liquid employed for such temporary filler may be water alone, in liquid or vapor form or carrying in solution various materials such as soap, or emulsified with oily or fatty ingredients, if it be desired to give a little more body to the fabric without impairing its pliability or softness, or various oils thinned out with appropriate thinners or solvents may be used, the object being merely to prevent more than superficial or slight penetration of the finishing material into the fabric.

Finishing material is next applied to color the fabric to the desired shade. For this purpose the appropriate shade or color of bronze powder is selected and mixed with commercial cellulose paste in the ratio, say of 4 parts of paste to 1 part of bronze powder, and then 5 or 6 parts of thinner to 1 part of the bronze-containing paste is added to thin or dilute the cellulose paste mixture to permit its application to the fabric.

The finishing preparation is then sufficiently thin to permit its being sprayed over the fabric with an atomizer or it may be flowed lightly over the fabric and then scraped off with a knife, leaving sufficient adhering to the fibers of the fabric to give the desired effect.

The color effect may be varied from that of a continuous or solid shade of any desired color of bronze powder to a blended or composite color produced by the blending of the original color of the fabric with that of the bronze powder selected according to the proportion of bronze powder employed and according to the quantity of finishing material applied to the fabric. If the finishing material carries the ratio of bronze powder above mentioned, and is thoroughly flowed over or sprayed over the fabric, a solid color or shade corresponding to that of the bronze powder will be obtained, if flowed more lightly and scraped off more effectively the underlying color of the fabric will blend with and modify the coloring of the bronze powder. If sprayed but lightly the bronze color will appear as a stippled effect but in any case the coloring effect will be permanent and will preserve the original pliability of the fabric practically unimpaired.

Instead of a cellulose carrier or binder to hold the bronze powder, other instances may substitute such, for example, as casein, which when used in the above described ratios and applied in an amount sufficient to reproduce a continuous or solid shade or a composite blend of the fabric color and the bronze will render the material moisture and soil proof so that superficial stain or soiled spots can be readily wiped off with a damp cloth without noticeable effect in the appearance of the fabric.

Besides varying the amount of finishing material or dressing applied, variations may be made in the proportions of the mixture itself with similar results. For example, the mixture of 1 part bronze powder to 4 of cellulose compound may be thinned with 10 or with 20 or even 30 times its bulk of thinner, the color effect and the proofing effect being correspondingly reduced or lessened.

The color effect may also be diluted by using a smaller ratio of bronze powder to the cellulose, say, 1 of powder to 10 or 12 of cellulose paste before thinning. It will be understood that the bronze assists in proofing the fabric but that the cellulose is the main proofing agent, hence if the cellulose be very thinly diluted the proofing effect will be diminished, though increasing the bronze powder content at the same time tends to offset this decrease in proofing effect if suffi-

cient bronze be employed to give a nearly continuous color effect.

Where proofing is not desired non-proofing substitutes such as waterglass or dissolved gums may be used in a similar manner. It should also be noted that as a general rule thinner solutions of the binder should be used on light delicate fabrics such as voile than would ordinarily be applied to heavier fabrics like poplin, for example.

While the bronze powders or as they are commercially known the "patent bronze" powders will give a large range of coloring effects particularly when applied to fabrics of different selected colors according to the principles above explained, and while it is possible by proper selection of the powders to produce cloths in close imitation of gold and silver cloth, yet, it will be understood this process is not available for the production of the finest grades of real gold cloth and silver cloth by the substitution of gold and silver powder in lieu of the bronze powders, and that the fabrics thus produced will be superior in texture and permanence or durability to gold and silver cloths as heretofore made, besides being less expensive to produce, the gold or silver powder being in such case equivalent to or a substitution for the bronze powder in the process described.

Not only does the metallic powder make possible in production of a wide range of color effects either to modify or completely change the original color of the fabric treated, but it also acts to kill or neutralize the greasy effect or appearance consequent upon the use of an oily or fatty substance for the preliminary moistening of the fabric when such substances are employed.

Process for the Treatment of Yarns

(1,511,212; October 14, 1924)

Henry James Wheeler Bliss, Leeds, England, Assignor to the British Research Association, for the woolen and worsted industries.

This invention relates to a process for the treatment of yarns composed chiefly or wholly of wool and/or hair, the process being such as to modify the yarn so that it has an enhanced power of shrinking when wetted as compared with ordinary yarn. The term yarn as used in this specification will be understood to refer to yarns made chiefly or wholly of wool or hair or wool and hair or other materials having the characteristics of wool or hair.

The process consists in wetting or at least moistening the yarn and then stretching it a definite amount substantially greater than that employed for straightening yarn in hank form as in dyeing, say not less than eight per cent in any case. By thus stretching the formed yarn, the individual hairs or fibers are each individually stretched, there being no substantial slipping of the hairs or fibers in the yarn by reason of the twist of the yarn. The yarn is then allowed to dry in the stretched condition, the drying being hastened, if desired, by the application of heat and circulation of air or gases so applied as to allow of the free escape of the moisture. On release, the yarn will be found to shrink somewhat but not to its original length On again wetting or moistening the stretched yarn, however, it will be found to shrink greatly even in some cases to its original length or less.

For the purpose of this invention it is clear that the yarn selected must be of sufficient strength and elasticity to bear the treatment described without an undue proportion of breakages.

This process does not refer to the customary reducing or drafting processes by which slivers of wool are successively diminished in diameter till the yarn is reached, such processes depending principally on a slipping of the fibers one upon another and the consequent reduction of the number of fibers present in a cross-section.

In ordinary winding, yarn may be stretched to varying extents and unequal take up and other faults often result. This invention regularizes the stretch and take up and produces a yarn with much greater take up than heretofore and one which is particularly useful in the construction of fabrics, e. g., hosiery, where, by inserting a portion of improved yarn alternately with a portion of ordinary yarn, fancy or shaped effects are obtained.

If desired, the yarn may be heated while in the moist and stretched condition but while preventing its drying, e. g., by exposing it to the action of saturated steam. Under these circumstances it becomes fixed more or less in its stretched condition, thus producing a yarn of greater permanent length or higher "count"; the amount of increase of length depending upon the amount the yarn is stretched, the length of time it is heated, the temperature, and the amount of moisture present.

SUPPLEMENTARY LIST OF DYES IMPORTED DURING DECEMBER

(*Continued from page* 116)

Schultz No.	Name of Dye and Manufacturer	Quantity (pounds)
358	Diphenyl Red	100
495	Malachite Green	25
565	Acid Blue B	400
571	Rhodamine 6G (single strength)	550
573	†Rhodamine B (single strength)	2,750
609	Phosphine	25
759	Anthraflavone G	1,500
763	Indanthrene Dark Blue BO	200
767	Indanthrene Violet RR (single strength)	880
826	*Indanthrene Red G	108
830	Indanthrene Red R	807
832	Indanthrene Violet RN (single strength)	1,756
838	Indanthrene Blue RS (single strength)	400
849	Indanthrene Ye'low (single strength)	440
869	Algol Brown (single strength)	2,400
910	Helindone Pink (single strength)	2,250
913	Helindone Orange R (single strength)	6,000

Schultz No.	Name of Dye and Manufacturer	Quantity (pounds)
917	Helindone Red B (single strength).....	300
918	Helindone Red 3B (single strength).....	1,500
920	Helindone Violet (single strength).....	2,000
512	Magenta IA Small Crystals—(C).....	25

UNIDENTIFIED DYES

Acid Dyes

Name of Dye and Manufacturer	Quantity (pounds)
Guinea Fast Red 2R—(A).....	700

Vat Dyes

Helindone Pink R (single strength)—(M)....	660
Hydron Brown G Paste—(C).....	800
†Hydron Yellow NF Paste—(C).....	1,000
Indanthrene Brown (single strength).....	1,600
Indanthrene Orange	200
Indanthrene Red GG.....	200
Indanthrene Yellow 3R.....	100
Metachrome Olive 2G—(A).....	1,500
Metachrome Red G—(A).....	100

Direct Dyes

Azonine Direct Blue B Paste—(C).....	25
*Azonine Direct Red G—(C).....	125
Azonine Direct Yel'ow RR Paste—(C).....	25
*Chlorazol Fast Orange AK—(BD).....	100
Diamine Azo Fast Bordeaux B—(C).....	100
Diamine Fast Bordeaux 6BS—(C).....	300
†Diamine Fast Orange ER—(C).....	1,500
Direct Black RMW—(C).....	200

Basic Dyes

Leather Black TBO—(C).....	300

Sulphur Dyes

Sulphur Yellow G Extra—(A).....	700

Color Lakes of Coal-Tar Origin

Azure Blue 315 BK Powder.....	250
Blue Lake 42D Powder.....	750
Madder Lake 2?21Z Powder.....	25
Violet 1030H	100
Viridine Lake 1026H Powder.....	1,000

Edward L. Talbot, formerly dyer at the Merrimack Mills, Dracut, Mass., has succeeded Walker Hulton as dyer at the John & James Dobson Mills, Philadelphia.

William Rollinson, overseer of dyeing for the Talbot Mills, North Billerica, Mass., recently resigned his position, to take a similar one with the Slater Mills of the American Woolen Company at Webster, Mass., where he succeeds William Tobin.

ADDITION TO SANDOZ XYLENE MILLING COLORS

Xylene Milling Orange R shade cards are being mailed to the trade by Sandoz Chemical Works, Inc. The universal fastness of this shade meets the particular requirements of wool, silk, gloria and half wool and half silk fabrics. This color is likewise described as suitable for effect threads, as cotton and viscose threads are left white.

This firm is also sending to the trade new insertions to their loose leaf shade cards. These additions illustrate three Acid Blues of exceptional brightness and purity of shade dyed on worsted yarn and piece goods, and silk piece goods, namely, Xylene Cyanol FF, Xylene Blue VS, Xylene Blue AS.

CHEMIST

Young German graduate chemist with good knowledge of English, at present employed with small dyestuff manufacturers, desires position in application laboratory where he may gain experience leading to becoming a salesman Address Box 284, American Dyestuff Reporter.

CHEMIST

With ten years' experience in the application of vat colors on cotton, art silk and silk; both yarns and piece goods; wishes to change from present position. Has good thorough experience in actual plant practices. Moderate salary with good chances of advancement desired. All communications confidential. Address Box 287, American Dyestuff Reporter.

CHIEF CHEMIST

Wishes to change position. Twelve years' experience in some of the largest dyeing, printing and finishing plants in the country. Moderate salary required, with good chances of advancement. At present employed, thus necessitating a month's notice. Address Box 288, American Dyestuff Reporter.

EXPERIENCED COLORIST

WANTED—Man capable of taking charge of dye testing laboratory in a manufacturing plant. Must be experienced in the standardization of sulphur colors. Exceptional opportunity for the right man. Address Box 290, American Dyestuff Reporter.

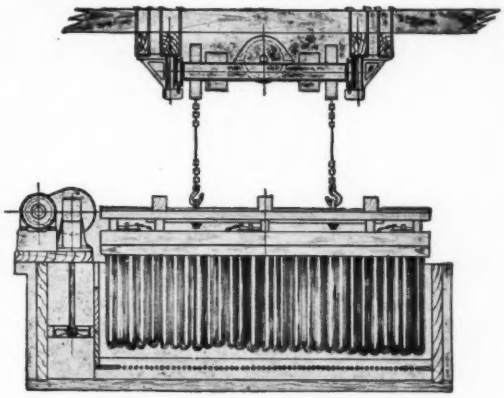
VAT COLORIST

Excellent opportunity for several experienced and capable colorists, thoroughly familiar with the application of vat or wool colors. Address Box 289, American Dyestuff Reporter.

FLETCHER
IMPROVED STEAM TURBINE
EXTRACTORS

INSURE SATISFACTION

FLETCHER WORKS
Incorporated
Formerly Schaum & Uhlinger
Glenwood Avenue at Second St. Philadelphia, U. S. A.



Patented split yarn rack.

Skein Machines for Dyeing or Bleaching, with Split Yarn Racks

With each top there are two sets of bottom rails. While one set is in the machine the other may be loaded or unloaded. It is not necessary to handle the skeins until they have thoroughly drained. Owing to the quick loading and unloading the output is increased.

Patentees and Sole Manufacturers

Hussong Dyeing Machine Co.
GROVEVILLE, NEW JERSEY

Established 1815

ARNOLD, HOFFMAN & CO., Inc.

PROVIDENCE, R. I. NEW YORK, N. Y. BOSTON, MASS.
PHILADELPHIA, PA. CHARLOTTE, N. C.

Importers and Manufacturers of

SIZING, SOFTENING and FINISHING SPECIALTIES
FOR ALL
TEXTILE FABRICS

Sole Agents for

BELLE ALKALI COMPANY, of BELLE, W. VA.

Manufacturers of LIQUID CHLORINE and CAUSTIC SODA (Solid and Flaked)
BLEACHING POWDER

"An educated man is one who knows where to find the information and knowledge he requires for his work."

Books for the Textile Chemist, for the Dyer, the Bleacher, the Dye Chemist

THE APPLICATION OF COAL TAR DYESTUFFS
The Principles Involved and the Methods Employed
By C. B. Whittaker
253 pages **$3.00**

APPLICATION OF DYESTUFFS TO TEXTILES, PAPER, LEATHER AND OTHER MATERIALS
By J. Merritt Matthews, Ph.D.
768 pages, 303 illustrations **$10.00**

THE DYEING OF COTTON FABRICS
275 pages, 44 illustrations **$5.00**

THE DYEING OF WOOLEN FABRICS
243 pages, 33 illustrations **$3.50**
By Franklin Beech

A MANUAL OF DYEING (Revised Seventh Edition)
A Complete Encyclopedia of the Art of Dyeing.
Written from a Practical Standpoint
By E. Knecht, C. Rawson and R. Loewenthal
Two volumes **$15.00**

PRACTICAL TREATISE ON THE BLEACHING OF LINEN AND COTTON YARN AND FABRICS
By L. Tailfer
(*Translated from the French*)
318 pages **$7.00**

YARN AND WARP SIZING IN ALL ITS BRANCHES
By Karl Kretschmar
(*Translated from the German*)
192 pages, 122 illustrations **$5.00**

Write for a catalogue of the leading technical books on dyeing, printing, bleaching, finishing, sizing and dye chemistry.

Howes Publishing Company
90 William Street New York City

AN AMERICAN PRODUCTION

OF REAL MERIT
For Those Who Can Appreciate
REAL WORTH

ALIZARINES BEAVER SULPHUR COLORS

ALIZARINE RED S POWDER

(SCHULTZ NO. 780)

WE GIVE SERVICE TO OUR TRADE

Has everything to recommend it. It is a home product, tested and proved.
Why not use it in preference to the foreign product?

THIS PRODUCT is made by BEAVER CHEM. CO.

DUNKER & PERKINS CO.
New England Agents
263 SUMMER ST., BOSTON

1816 CHEMICALS *1925*

"Over a Century of Service and Progress"

BLEACHING POWDER
FINISHING MATERIALS
FORMIC ACID
COLORS
GUMS and WAXES
DYESTUFFS CAUSTIC SODA

INNIS, SPEIDEN & CO.

Manufacturers, Importers, Exporters of Industrial Chemicals

46 Cliff Street New York

BRANCHES:
Chicago Philadelphia Boston Cleveland
Gloversville, N. Y.

United States Color & Chemical Company, Inc.

93 Broad St. Boston, Mass.

New York Office: 25 Howard St.

FACTORIES:
NEW ENGLAND ANILINE WORKS, Inc.
Ashland, Mass.

GARFIELD ANILINE WORKS, Inc.
Garfield, N. J.

Even Dyeing Assured By Diastafor

—Standardized and reliable, Diastafor is the perfect de-sizing agent for the textiler

—Easy to use, it improves the quality of your fabrics and assures absolutely uniform dyeing.

The Fleischmann Company
DIASTAFOR DEPT.
695 Washington Street New York, N. Y.

DIASTAFOR WAREHOUSES:
Boston, Mass. Cincinnati, Ohio New York, N. Y.
Philadelphia, Pa.

New York 2-4-6 Cliff St. **Boston** 40 Central St. **Philadelphia** 583 Drexel Bldg.

JOHN D. LEWIS

IMPORTER AND EXPORTER

DYESTUFFS and CHEMICALS

——Manufacturer of——

TANNIC ACID, COMMERCIAL
TANNIC ACID, U. S. P. AD C. P.
TARTAR EMETIC
ANTIMONY SALTS
CRUDE AND HALF REFINED TARTAR
ANTIMONY LACTATE
ACETATE OF CHROME
FLUORIDE OF CHROME
ACETATE OF IRON
NITRATE OF IRON
GALLIC ACID
DYEWOOD EXTRACTS
TANNING EXTRACTS

Jobbers Of
CHEMICALS :: STARCHES :: GUMS

PROVIDENCE, R. I.
Office: 1209 Turks Head Building
Works: Mansfield, Mass.

S. R. DAVID & COMPANY
INCORPORATED

Dyestuffs

---

252 Congress Street, Boston, Mass.

Tel. Main 1684

Index to Advertisers Appearing in This Issue

Althouse Chemical Co. XVIII
American Aniline Products, Inc. III
American British Chemical Supplies, Inc. ..... —
American Dyewood Co. ..... —
American Laundry Machinery Co. ..... —
Amid Duron Co. IX
Arabol Manufacturing Co. ..... —
Arkansas Co. IV
Arnold, Hoffman & Co. XV
Atlas Electric Devices Co. X

Bosson & Lane IV

Calco Chemical Co. XIV
Campbell, John, & Co. X
Ciba Co. ..... —

David, S. R., & Co. XVII
Dunker & Perkins Co. XVI
Du Pont de Nemours, E. I., & Co. ..... Second Cover
Dye Products & Chemical Co. ..... —
Dyer & Calico Printer VI

Fleischmann Co. XVII
Fletcher Works XV
Fortner, L. B., & Co. ..... —
Foster, Edward C. ..... —

Geigy Co., Inc. ..... —
Grasselli Dyestuff Corp. ..... —

Hussong Dyeing Machine Co. XV

Innis, Speiden & Co. XVI

International Nickel Co. ..... XI, XII
International Salt Co. V

Jennings & Co. XVIII

Klauder-Weldon Dyeing Machine Co. IX
Klipstein, A., & Co. ..... Back Cover
Knitting Arts Exhibition IV

Lewis, John D. XVII

Malt-Diastase Co. X
Metz, H. A., & Co. ..... —

National Aniline & Chemical Co. XIII
Newport Chemical Works ..... Front Cover

Roessler & Hasslacher ..... —
Rohm & Haas Co. IX

Sandoz Chemical Works V
Society of Dyers and Colourists ..... Third Cover

Tinc Tura Laboratories VII
Tolhurst Machine Works ..... —

United Aniline Co. ..... —
United Chemical Products, Inc. VI
U. S. Color & Chemical Co. XVII

Wolf, Jacques, & Co. VII

JENNINGS & COMPANY, Inc.

93 Broad Street Boston, Mass.

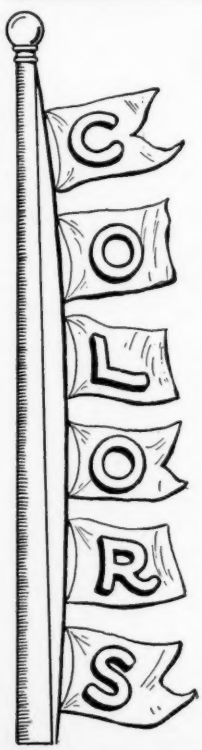
Every delivery of our Colors is guaranteed equal to standard. No shipment leaves our warehouses without closest scrutiny.

Our experts in the dyeing of leather and textiles are at the call of Manufacturers and Finishers. No charge is made for their time and experience.

The dyeing problem is complex. The cost of dyeing per unit of material is only one factor in the problem of successful merchandising. The effectiveness of that dyeing—its success in meeting trade conditions—is a factor even more important.

We are equipped to render a service unexcelled by any American distributor of dyestuffs by giving counsel and aid to accomplish best results in the dyehouse.

Let us render you this service



ALTHOUSE

Silk Brown R
[Reddish Cast]

Silk Brown G
[Greenish Cast]

Two extraordinary products directly appealing to Dyers of Silks, Woolens and Unions.

They excel in level dyeing qualities, affording, as well, highly desirable results when dyed in neutral or even slightly alkaline baths.

Both may be relied upon for a dependable fastness to all ordinary agencies.

May we submit samples?

Althouse Chemical Company
READING, PA.

NOW READY

COLOUR INDEX

in the English Language

Edited by

F. M. ROWE, D.Sc., F.I.C.

assisted by
C. LEA, M. Sc. Tech.
and
A Large Revision Committee of Experts

Size **12½"** x **9½"** **371** Folios (**742** Pages)

Bound in Full Leather $28.00 **Bound in Full Cloth** $25.00

COLOUR USERS will find the "Alphabetical List" which sets out the various Makers of each Colour of the greatest use and assistance to them.

CONTENTS

SECTION A—Synthetic Organic Dyestuffs (291 folios).
SECTION B—Natural Organic Dyestuffs (10 folios).
SECTION C—Natural and Artificial Inorganic Colouring Matters (Mineral Pigments) (16 folios).
SECTION D—General Indices, Commercial Names, Patent Numbers, Intermediate Products, etc. (54 folios).

Commercial Names
Scientific Names
Components
Formula
Preparation
Discovery
Mode of Application
Literature
Description
Properties

of

Over 1300 Dyes

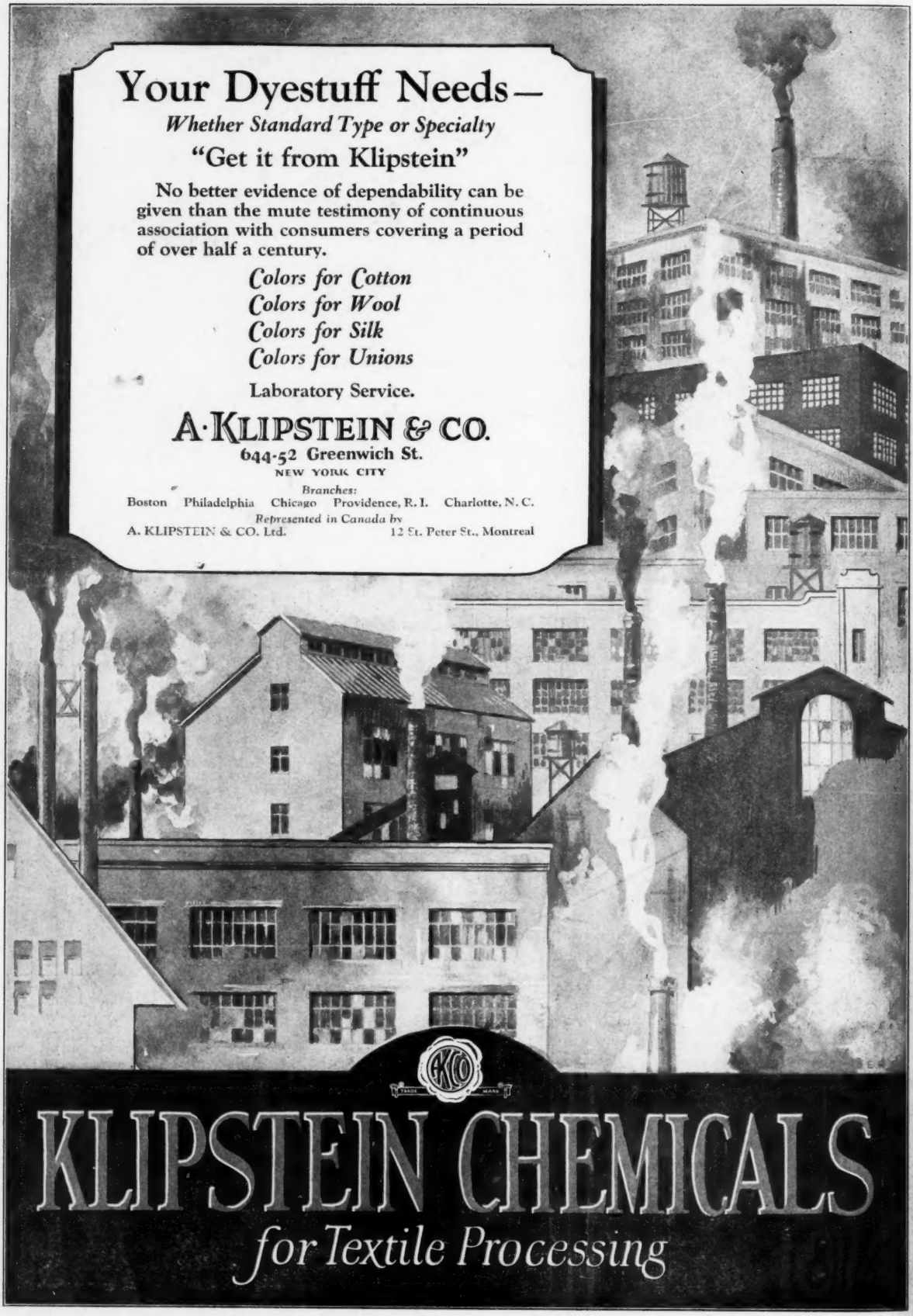
given, also a special column for purchaser's notes.

PUBLISHED AND ISSUED BY

The Society of Dyers and Colourists

PEARL ASSURANCE BUILDINGS, BRADFORD, YORKS., ENGLAND

For further particulars required apply THE SECRETARY


Your Dyestuff Needs—
Whether Standard Type or Specialty
"Get it from Klipstein"
No better evidence of dependability can be given than the mute testimony of continuous association with consumers covering a period of over half a century.
Colors for Cotton
Colors for Wool
Colors for Silk
Colors for Unions
Laboratory Service.
A·KLIPSTEIN & CO.
644-52 Greenwich St.
NEW YORK CITY
Branches:
Boston Philadelphia Chicago Providence, R. I. Charlotte, N. C.
Represented in Canada by
A. KLIPSTEIN & CO. Ltd. 12 St. Peter St., Montreal
AKO
TRADE MARK
KLIPSTEIN CHEMICALS
for Textile Processing